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DIVERTICULITIS: A CLINICAL REVIEW

BY

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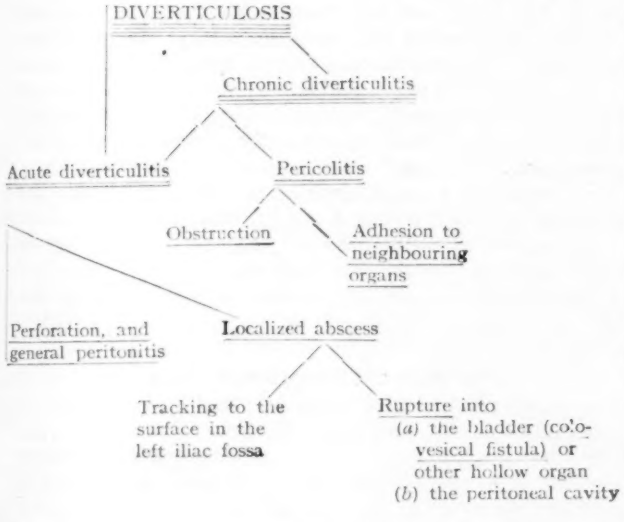
The circumstances of the anatomy and position of colonic diverticula predispose them to secondary pathological processes. They are bottle-necked, thin-walled sacs opening from a muscular tube, which contains faecal material rich in micro-organisms. The initiation of secondary changes depends entirely upon the retention of faecal matter within the diverticula, and it is clear that the more solid the stage which the faecal material has reached, the greater tendency there will be to retention. Hence the sigmoid colon is easily the commonest site for diverticulitis, not only because it is the commonest situation for the formation of diverticula, but because its contents are solid.

The presence of a faecal concretion may lead to a variety of secondary inflammatory changes, which are set out from the clinical standpoint in the accompanying scheme.



These changes vary from acute infection of the diverticulum, with perforation into the general peritoneal cavity, to a chronic reactionary fibrosis of the wall of the colon, extending in some cases to beyond the peritoneal covering. To such a condition the term "perisigmoiditis" is applied. Such a mass of inflammatory tissue may ultimately produce stenosis of the bowel simulating carcinoma, or cause adhesions between the colon and neighbouring organs.

Should acute diverticulitis supervene in a diverticulum walled off by fibrous tissue immediate perforation into the peritoneal cavity is improbable, and a localized abscess may form in the mass of fibrous tissue surrounding the colon. An abscess of large size may eventually rupture into a neighbouring hollow organ, such as the bladder, or into the peritoneum. Not infrequently an abscess of this kind will track along the side of the bowel to come to the surface under the parietes in the left iliac fossa.

The formation of intracolic and pericolic fibrous tissue may be due, in part, to the mechanical irritation of the faecal mass, but the main factor is probably infection from the lumen. This is due to the filtering of toxins or actual organisms through the damaged mucosa, which is stretched over the retained mass.

The Clinical Aspects

One hundred and forty-six cases, from various sources, of diverticula of the colon were investigated from the clinical standpoint. Of these, sixteen were cases of fistula into the bladder, the notes of which were loaned to me, and these will be excluded from the series for purposes of statistics. Of the remaining 130 cases, complications, due to the diverticula, occurred in nineteen, or 14.6 per cent. of the total. The complications were as follows:

	No. of Cases
Obstruction, large bowel	6
,, small bowel, from adhesions ...	1
Acute perforation	4
Abscess	3
Abscess with secondary perforation into the peritoneum	2
Fistula into the bladder	2
Fistula into the bladder and abscess in the pelvis	1
Total	19

This leaves 111 uncomplicated cases. In thirty-three of these other conditions were present, which were responsible for the symptoms either wholly or in part; thus seventy-eight cases of uncomplicated diverticulitis remain.

Uncomplicated Diverticulitis

Under this heading is included chronic diverticulitis with and without acute or subacute exacerbations, and this description is based on the seventy-eight cases in which neither complications nor associated abdominal disease were present. Though all these patients had diverticula of the colon, there was some difficulty in estimating the number who were suffering from diverticulitis as opposed to diverticulosis. Knowing that diverticula are present, by what criteria must one judge the presence of inflammation in them? In the more severe cases—those who are subject to acute or subacute exacerbations, or who have a palpable tender swelling—no doubt will exist, but in the greater number the symptoms are vague. While it is true that inflammation of mild degree may give rise to pain in the left iliac fossa, one must not lose sight of the fact that pain may arise from that disordered action of the bowel of which diverticula are the outcome.

The physical signs of thickening of the colon felt per abdomen must be accepted as evidence in favour of inflammation, but many of the patients are so obese that any such thickening cannot be felt. Mere tenderness over the colon is not an absolute sign, as it is frequently present in spastic constipation when *x*-ray examination

has proved the absence of diverticula. Involuntary spasm of the abdominal muscles is an absolute sign of subjacent inflammation, but if the colon is tender to palpation voluntary rigidity is also present, and may in some cases be very difficult to distinguish from reflex rigidity. *X*-ray examination may demonstrate spasm of the colon, but this may not be the result of inflammation in the diverticula; it may be the irregular action which is the prelude to their formation.

It will be conceded, therefore, that on the history, the physical examination, and the *x*-ray findings, it may be impossible to distinguish diverticulitis from diverticulosis, except in the severer cases, and I have failed in my attempt to estimate the percentage of cases of diverticulosis in which inflammation occurs. Rankin and Brown, in 1,300 cases in which diverticula were found in the colon, state that 17 per cent. were suffering from diverticulitis. If pain is regarded as a criterion of inflammation, then the following analysis of the symptoms will show that in the present series the percentage incidence is infinitely greater than this.

Analysis of Symptoms

In sixty-nine of the seventy-eight cases there were symptoms referable to the large intestine. The most constant of these was pain, which was present in fifty-four. This varied considerably in character; in some it was a dull ache, and in others it came in colicky attacks. Sometimes it was brought on by attempts at defaecation, but in others it was unaffected by this act. In forty-one of the fifty-four cases it was situated in the left iliac fossa. Other distributions were as follows: right iliac fossa, five cases; lower abdomen, four; umbilicus, one; and epigastrium, five, in two of which there was also pain in the left iliac fossa, and in the other three it was related to food. The site of the pain did not always correspond with the segment of the colon most affected by diverticulosis, as indicated by *x*-ray examination. In fifteen cases pain in the back was also complained of, but in the majority of these it may have been the result simply of constipation. There was no actual pain in fifteen cases, but the patients complained of disturbances of a more vague character, chiefly on the left side of the abdomen. These disturbances were variously described as rumbling noises, windy spasms, flatulence, soreness, and fullness of the stomach, and were felt more during defaecation, or when the patient was more than ordinarily constipated.

Constipation.—The bowel history was known in seventy-one of the seventy-eight cases. Only nine patients claimed to be normal in their bowel action. Forty-eight were constipated, and in thirty-three of these the constipation was of long standing and was severe. In thirteen it was of recent origin, and in two it was stated to be slight. There was a definite history of irregularity in six. The bowels were loose in three, and in five there was constipation alternating with diarrhoea; in three of these the bowel had previously been constipated. The latter condition must be regarded as significant of obstruction, but this is not always present, for the attacks of diarrhoea sometimes coincide with, and are due to, recurrent exacerbations of inflammation.

Blood and Mucus.—These were present together in three cases, and in three there was blood alone. Of these, one had severe cardiac disease and another had piles of moderate severity, but in the remainder no other cause for bleeding could be found. In a further series of twelve cases the test for occult blood was negative. Bleeding should not, therefore, be regarded as a characteristic of the condition. In the rare cases in which it is present it is probably due to associated colitis. Mucus was passed with stools in nine cases; this is a common accompaniment of severe constipation, however, and is not of special significance.

Bladder Symptoms.—Symptoms arising from the bladder were present in eight cases. Increased frequency and pain on micturition either together or alone were complained of on seven occasions, and in one case there was incontinence. It is difficult to say how far these urinary symptoms were directly due to the diverticula. In one case the patient complained of frequency, pain, and a little difficulty. The urine was foul. The prostate was not enlarged, and the symptoms suggested that the formation of a fistula from the colon into the bladder was imminent. In two other cases the urinary symptoms were increased during attacks of abdominal pain.

Physical Signs.—Of sixty-four patients, thirty, or less than half, were obese. Of the remainder, twenty-five were regarded as of medium build, and nine as thin. In forty-four of the seventy-eight cases abdominal tenderness was present, in most instances in the left iliac fossa. This varied considerably in degree, from pain on deep palpation to severe pain on light palpation, with spasm of the overlying abdominal muscles. In twenty-four cases the sigmoid colon could be felt, and in five of these it appeared to be thickened. In eleven cases a definite lump was present, but in not all of these was the lump due to inflammatory thickening. In one patient, for example, a very large mass could be felt under the liver on the right side. It was diagnosed as a growth at first, but it disappeared with enemata, and subsequent *x*-ray examination showed diverticula in the distal part of the transverse and the sigmoid colon.

Clinical Diagnosis

Though the above analysis suggests that the clinical findings are for the most part vague, the diagnosis of diverticulitis is by no means a difficult one to make on clinical examination. The symptoms, taken in sequence as has been done above, do not furnish the true clinical picture, which is a characteristic one. Study of the case records shows the justification for this statement. A patient over the age of 45 complains of mild attacks of pain situated chiefly in the left iliac fossa. During the past few years he has noticed an increasing tendency to constipation. He feels a fullness on the left side, and puts his hand over the left iliac fossa and complains of tenderness there. The similarity to early malignant disease is patent, and one is not justified in accepting the clinical diagnosis of diverticulitis without excluding the possibility of growth—which not infrequently coexists—by *x*-ray examination.

Diverticula can occasionally be seen through the sigmoidoscope. In eleven examinations they were seen on two occasions. Sigmoidoscopy cannot be relied upon to any great extent for the diagnosis, however, which is far more readily made, and with less discomfort to the patient, by radiography.

Treatment of Uncomplicated Cases

The main treatment of uncomplicated cases of chronic diverticulitis is to avoid complications. Colonic lavage should be insisted upon, and every hospital which deals with this type of case should be equipped with facilities for this treatment in the out-patient department. The object is to wash away any retained products in the colon, and not to disinfect it, and it therefore matters little what lotion is used. Ordinary tapwater is probably as useful as any antiseptic solution, though one would not dispute the value of the natural waters at Bath and other spas.

The wash-out should be at body temperature, and the two details which *must* be insisted upon are: (1) not more than two pints should be used; and (2) the head of water should not exceed eighteen inches. This errs, perhaps, on the conservative side, but no one will deny the power for harm that lies in over-distension of the colon, especially the colon which has departed from the normal.

The diet should be mainly vegetarian; it need not be strictly so, but excess of cellulose should be avoided. The latter is an important item. The colon is not fitted to be a receptacle of the quantity of cellulose recommended by faddist societies, and to load the inflamed colon with undigested cellulose is clearly not to be desired.

Operative Treatment

The role of the surgeon in the treatment of diverticulitis is largely confined to the treatment of its complications. The nature of the disease and its irresistible tendency to adhesions make cases where local excision is possible very few and far between. In this series a radical operation was performed in five cases: there were three resections of gut, and in two the Mikulicz operation was performed. In only one case—a comparatively mild one—was the procedure limited to one operation. Though this patient remains in reasonable health to-day, six years after the operation, I regard the operation, in the light of additional experience, as unjustifiable, and a case of this low degree of diverticulitis I should now treat by medical means. The other four cases were progressing dangerously towards one of the complications, and it is only in such cases—one might almost say at this stage of the disease—that operation is justifiable. The difficulties that may be encountered, which make the decision to operate a weighty one, are well illustrated by one of my cases. The patient is now alive and well, but he underwent no fewer than five operations. The condition encountered at laparotomy did not justify an attempt to excise the mass, and hence the peritoneum on the left of the intestine was incised and the affected bowel mobilized and brought on to the surface of the abdomen.

Though the technique is difficult, when circumstances make it possible—that is, when the condition is localized—there is no doubt that the radical procedure in these borderline cases is the best line of treatment that can be offered. The alternative is an attempt to rest the diseased portion of the bowel by simple colostomy, with a promise to the patient that this will be closed at a later date. Such a method, however, not infrequently falls short of expectation.

Temporary colostomy—merely creating a fistula between the bowel and the abdomen—is doomed to failure. Such an operation only partially drains the bowel and does not allow of that degree of rest which is a *sine qua non* of recovery of the inflamed portion. The same applies with greater force to caecostomy, which is to be condemned except as a possible prelude to the radical operation. Apart from the distress it causes the patient, caecostomy gives only very imperfect drainage to the colon, and has a very limited effect upon the inflamed distal portion. This is clearly shown in one patient who suffered an acute recurrent attack of diverticulitis fourteen days *after* caecostomy had been performed as a preliminary to the radical operation.

It is essential, therefore, for the colostomy to be of permanent type if the patient is to derive any benefit. The question will arise, How long should the colostomy be allowed to remain? The question is unanswerable. There is no guarantee that symptoms will not recur after the colostomy has been closed by operation, even though all symptoms have subsided. A minimum period of at least twelve months must be insisted upon. The closure of a permanent colostomy is not unattended by risk to the patient, even if one of the ingenious extraperitoneal methods are used. And for such an operation, successfully achieved, to be followed at a later date by a recurrence of symptoms is a grave disappointment to both patient and surgeon. If such a recurrence is severe, and the danger of complication appears imminent, the only operation possible is a second colostomy, for the previous operation would in all probability make the task of excision a difficult one.

The following guiding lines for treatment are therefore submitted: (1) Uncomplicated mild diverticulitis—medical treatment. (2) Severe recurrent diverticulitis, in which complications appear to be imminent—laparotomy with a view to determining the possibilities of excision, and if this be thought possible, a preliminary transverse colostomy or caecostomy. Operation should be postponed to an interval between the attacks. If the condition met with appears unsuited to radical treatment, a permanent type colostomy, made *as near as possible* to the inflamed area, and left open for a minimum period of twelve months.

Diverticulitis with Obstruction

Six cases of chronic fibrous obstruction of the large bowel due to diverticulitis appear in my series. The complication is therefore not uncommon. The similarity, both in history and in physical signs, and even on naked-eye examination, between this condition and carcinoma of the bowel is well and widely recognized. In one case the nature of the condition was only revealed by microscopical examination after the mass had been resected at operation, which was successfully performed in one stage. In a second case the patient had been admitted a year previously and treated by colon wash-outs. She was well on discharge, but neglected to continue with the treatment, and was readmitted with acute obstruction. A Mikulicz many-stage operation was satisfactorily performed. The sigmoid colon had become obstructed in a third case by a band passing from an inflamed diverticulum to the left Fallopian tube, while in a fourth a caecostomy had been performed, but, two years later, *x*-ray examination demonstrated that the condition of the colon had not improved sufficiently to warrant closure. In two further cases the patients, who were both over 70, refused operation.

The difficulty in distinguishing, both clinically and at operation, between obstruction due to diverticulitis and that due to growth makes it imperative to remove the mass, either by resection or by the Mikulicz method. Radiography cannot always be relied on to differentiate between them, although the method of dual exposure, devised by my colleague Dr. Graham Hodgson, may be of help in many cases. The presence of diverticula elsewhere in the colon is no criterion whatsoever that the mass is inflammatory, as diverticula and growth frequently coexist. (Six cases out of 130.)

Obstruction of the small intestine as a result of adhesions to a portion of the sigmoid affected by the diverticulitis is perhaps the most serious of the complications. It was accompanied in one case by chronic obstruction of the colon itself. The left iliac fossa was filled with a mass of fibrous tissue, to which a coil of the ileum had become firmly adherent. The ileum above the obstruction was dilated and its wall thickened. The surgical treatment here is a problem of considerable difficulty. It is manifestly useless to attempt to separate the adherent ileum from the colon, for recurrence is certain, and the obstruction must be short-circuited either by ileo-ileostomy or ileo-transverse-colostomy. In addition the obstruction to the colon must be treated. In the case in the present series the ileal obstruction was a chronic one situated about three feet from the ileo-caecal valve. An ileo-ileostomy was made around the obstruction, and a transverse colostomy performed. The patient died three days later from ileus.

Acute Perforative Diverticulitis

This complication is, fortunately, rarer than might be expected. Diverticulitis is usually an insidious disease, and the diverticula are walled off by the formation of fibrous tissue. It occurred in four cases in the present series.

The history and pathological process are similar to that of perforation of the appendix into the general peritoneal

cavity, except, of course, that the early pain and the physical signs are on the left side of the body. There is usually a history of vague pain preceding the acute onset, but on occasion this is absent, the acute condition appearing with dramatic suddenness. Perforation may follow some strain, or occur during a prolonged attempt to defaecate. An important sign not obtained in perforation of the appendix is an early distension of the abdomen, with a tympanitic note on percussion due to the presence of gas.

It goes without saying that immediate operation should be performed in these cases. The conduct of the operation, once the abdomen is opened, will depend entirely upon whether the perforated diverticulum can be found or not. In one case this was possible. The diverticulum, which was at the upper end of the rectum, was excised, the opening in the bowel closed by a purse-string suture, and a temporary caecostomy used to relieve the distension of the large bowel. A drainage tube was placed down to the site of the opening into the bowel.

If the site of perforation cannot be determined, or the opening be buried in a mass of fibrous tissue so that it cannot be closed by any plastic operation upon the bowel, the great omentum is brought down and fixed over the area with one or two stitches, and a colostomy performed as close to the area of diverticulitis as possible, and the abdomen drained.

Though the prognosis of the former class of case is relatively good, that of the latter is poor. In the present series the one patient in the latter class personally operated upon succumbed.

Abscess with Diverticulitis

The formation of a localized abscess is a not uncommon sequel to diverticulitis. In the majority of cases its formation is accompanied by an attack of acute diverticulitis, with a high temperature, and, not infrequently, diarrhoea. The acute inflammatory condition may subside suddenly when the abscess ruptures into a neighbouring organ, such as the small intestine, rectum, vagina, or bladder. In three cases the abscess ruptured into the peritoneal cavity, and terminated fatally.

The appearance of a collection of pus under the abdominal wall may be accompanied by only the mildest symptoms, but a history of an acute attack of abdominal pain preceding the formation of the swelling is usual. The insidious manner in which the swelling appears may mislead one as to its true nature. In one such case a woman patient had a fluctuating swelling in the left iliac fossa, with no inflammatory signs, and only a small evening rise in temperature. The condition was regarded as tuberculous until investigation of the contents revealed its true nature.

From examination of one specimen, in which there is a small abscess cavity in the centre of the pericolic mass of fibrous tissue, it seems probable that a small abscess around a diverticulum buried in fibrous tissue may be absorbed, without having given any indication of its presence. Indeed, it is probable that such abscesses are frequently formed during an attack of acute diverticulitis.

If it is clear that an abscess associated with diverticulitis is present, it should be opened. Whether or not at the same time colostomy should be performed depends very much on the condition found. Generally speaking, a conservative policy, confined to dealing with the needs of the moment, is wisest. The abscess should be drained, and the inflammatory condition allowed to subside, before deciding upon the line of treatment to be adopted for the underlying diverticulitis. In one case so treated a small faecal fistula developed through the operation incision in the left iliac fossa. This persisted for four years, during which time the patient was free from symptoms. At the end of this period, however, the fistula suddenly closed, and another peridiverticular abscess developed, which was opened, and a colostomy performed. The latter is still present, and the patient remains well.

Colo-vesical Fistula

Though rarely of itself a cause of death, colo-vesical fistula is one of the most dreaded complications that may follow upon inflammation of diverticula of the colon. Of nineteen cases of colo-vesical fistula due to diverticulitis sixteen were in men and only three in women. The oldest was 69 and the youngest 44; the average age at onset was 54. The characteristic symptom of the condition is the passage of air and faecal material per urethram. In all cases there was a history, varying from thirteen years to one month, of acute pain in the abdomen. The average duration, in fifteen cases, of abdominal symptoms before the onset of the passage of air and faeces was three years and nine months. In most of the cases the onset of urinary symptoms corresponded with an acute attack of abdominal pain accompanied by fever. On occasion urinary symptoms might come on at the height of an attack, and the latter suddenly abate. Thus in one case pus suddenly appeared in the urine during an attack of acute pain, which had lasted for a few days, and on the appearance of the pus the pain rapidly subsided. This was unquestionably due to the rupture of a perisigmoid abscess into the bladder. It may take some little time before a fistulous track from the colon into the bladder is established in consequence of this rupture, so that the passage of air and faeces per urethram may not follow the first appearance of pyuria for some days. In one case the interval between the onset of pyuria and the appearance of faeces in the urine was ten days; the latter followed a dose of castor oil taken to disperse the lump in the left iliac fossa. In another case the interval was two years, and in a third frequency of micturition heralded the onset of pneumaturia.

The quantity of both air and faeces passed once the fistula is established varies considerably. In some cases it appears only at intervals, and there is considerable improvement in between. In two cases faeces were passed, but the patient was never conscious of the passage of air. One of these was a man and one a woman. In a third case, in which this symptom was absent, a colostomy had been performed *before* the fistula developed.

The bladder nearly always becomes inflamed, especially in the early stages, and frequency of micturition both by day and by night is common. One of the most notable features, however, is the apparent immunity to infection by the faeces which the bladder ultimately develops. In these cases, except during the periods when faecal material is passed in considerable quantity, the urine is clear, and the patient relatively free from bladder symptoms. Cystoscopy reveals a healthy bladder mucosa.

Ascending infection from the bladder to the kidneys is of relatively rare occurrence, owing, presumably, to the acquired immunity of the bladder mucous membrane, and this customary freedom from attacks of pyelitis must be borne in mind when deciding upon the treatment to be carried out in each case. In this series only one patient suffered symptoms of pyelitis, and this was limited to one attack. Haematuria occurred in three cases; in one it preceded by a month the passage of air through the urethra. In one or two cases the patient has been troubled at intervals by the passage of large quantities of mucus per urethram. A phosphate stone

subsequently developed in the bladder in two of the cases, in one of which a colostomy had been performed previously to relieve the condition. The onset of symptoms due to the stone was six months after this operation.

The diagnosis of colo-vesical fistula is readily made from the clinical history. *X*-ray examination is of little assistance, except to exclude the possibility of a malignant fistula. The barium does not readily enter the fistulous track, and it is a matter for comment that in radiographs of some of the cases the bowel does not appear to be grossly affected by diverticulosis. The clinical diagnosis is confirmed by cystoscopy, which will reveal the opening into the bladder. In the majority of cases this is situated near the apex on the postero-superior wall to the left of the midline, though in one case the opening was to the right of the midline. In some cases the opening may be masked because of the oedema of the wall consequent upon infection, and owing to the ease with which faeces pass through the fistula it becomes difficult to obtain a clear medium in the bladder through which an adequate inspection can be made. In such cases a preliminary course of bladder lavage must be instituted, and an attempt must be made to keep the bowels constipated for a few days prior to the cystoscopic examination.

Treatment of Colo-vesical Fistula

The ease of diagnosis is but a poor compensation for the difficult problem which confronts one as to the wisest treatment to adopt for colo-vesical fistula. The histories of the nineteen cases were as follows: colostomy, three cases; radical operation, one; radical operation and colostomy, three; no operative treatment, twelve; colostomy advised but refused, five; and spontaneous healing, one.

Colostomy.—The results obtained in three patients indicate that the case for colostomy is not a strong one. In one patient a fistula formed a year after colostomy had been done for diverticulitis. One should not lose sight of the fact that a colostomy is not the most desirable thing for the patient to live with, and the patient should not be made to pay the price of a permanent colostomy without any guarantee of reward in the alleviation of the bladder symptoms. In five cases in which colostomy was suggested the patients, probably wisely, turned it down, preferring to put up with the inconvenience of a fistula into the bladder than of one on to the abdominal wall. It must be remembered also that the bladder frequently becomes tolerant to the infection, and attacks of pyelitis are rare. The diverticulitis abscess has ruptured, and is draining into the bladder, so that which colostomy aims to do by operation has been achieved naturally. Moreover, there seems to be just as much liability to the development of a secondary abscess with the bowel draining on to the abdominal wall as with the bowel draining into the bladder. In one case urine actually leaked through the lower colostomy wound when the patient passed water. On this evidence colostomy is not a sound line of treatment, and certainly should not be undertaken without the patient being fully alive (*a*) to the discomfort of a colostomy, and (*b*) to the absence of any guarantee of cure of the bladder symptoms.

Radical Operation.—In the one case in which the radical operation was performed in one stage the fistula recurred after four months. The one-stage operation is unsuited to the condition, and I do not now give it any place in the treatment; in my view it should be abandoned.

Radical Operation with Colostomy.—Of the three cases in which radical operation was combined with colostomy one patient has been lost sight of. In the successful case a first attempt at closure failed. The essential difference between this and the second and successful attempt was that in the latter the suture lines in the bladder and colon were separated by interposing the omentum. Though all three patients survived their operations, reference to the literature shows that the operation carries a relatively high mortality. It is difficult of accomplishment, and the subjects are nearly all poor operative risks. Suitable cases in which operation is justifiable are therefore few and far between, and if doubt exists discretion will be the better part. So far the case for operation is not a strong one. Colostomy alone is disappointing, and the operation for closure is only justifiable in a small proportion of cases.

What is the result of non-operative treatment? One patient in this series apparently underwent a spontaneous cure. Ten of the remainder continued in fair health. Not one of them suffered the stormy incidents that figured in some of the operated cases. In nearly all of them the attacks of abdominal pain were less frequent and less severe after the fistula had formed than before. The colon had acquired a natural safety-valve. This, in conjunction with the high degree of bladder tolerance and freedom from pyelitis, already commented upon, allowed the patients to lead a comparatively happy existence. At least five of them preferred the fistula to a colostomy.

A great deal can be done to alleviate the bladder condition by frequent bladder wash-outs, either in a course or at regular weekly intervals. The technique is simple, and the patients have little difficulty in acquiring it themselves. Dilute antiseptics, such as 1 in 20,000 oxycyanide of mercury, should be employed.

Conclusions as to Treatment.—Owing to the extreme difficulty of operation, the lack of guarantee of success, the high mortality, and the poor operative risk, an attempt to close the fistula at operation should only be undertaken when the patient is comparatively young and the fistula of recent occurrence. The operation should be preceded by a preliminary colostomy.

I wish to thank the Council of the Royal College of Surgeons for permission to use material from the Jacksonian Prize Essay, 1932, in preparation of this review, and my medical and surgical colleagues at King's College Hospital for permission to utilize their cases. I also wish to thank Sir John Thomson-Walker for his very kind loan of the clinical notes of some of his cases of fistula into the bladder.

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The fourth conference of the International Association of Preventive Paediatrics (medical section of the Save the Children International Union) will be held this year at Lyons on September 27th and 28th. The subjects to be discussed and the names of the rapporteurs are: (1) "The Prophylaxy of Malaria in Children," by Professors Cacace (Naples) and Gillot (Algiers), with whom will be associated Dr. Larrouy (a British rapporteur will be named later); (2) "The Prophylaxy of Rickets and Convulsions," by Professors Adam (Dantzig) and Monrad (Copenhagen). Those who desire to be present at the conference, as well as to take part in the discussions following on the reports, are requested to communicate with the secretary of the I.A.P.P., 15, Rue Lévrier, Geneva, Switzerland.

EPHEDRINE AND PSEUDO-EPHEDRINE IN ASTHMA, BRONCHIAL ASTHMA, AND ENURESIS*

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The work here described was part of an inquiry arranged by the Therapeutic Trials Committee into the relative values of ephedrine and pseudo-ephedrine. The ephedrine and pseudo-ephedrine hydrochloride used in the tests were supplied to the committee by Messrs. Burroughs Wellcome and Co., who also provided a quantity of inert tablets for use as controls.

The comparative pharmacology of ephedrine and pseudo-ephedrine is discussed in detail elsewhere in a paper by Dimson.[1] The two alkaloids occur together in varying proportions in the several species of *Ephedra* used commercially for the manufacture of ephedrine. They have the same chemical structure—namely, $C_6H_5.CHOH.CH(NH.CH_3).CH_3$. There is, however, a physical distinction between the two, ephedrine being laevorotatory and pseudo-ephedrine dextrorotatory. On the basis of the findings with regard to other optical isomers, such as *l*- and *dl*-hyoscyamine, it might be expected that ephedrine and pseudo-ephedrine would have similar qualitative actions but would differ quantitatively. Clinical evidence may be said generally to support this view.

Before the trials were begun the actions of ephedrine and pseudo-ephedrine had been compared in India by Chopra, Krishna, and Ghose,[2] who reached the following main conclusions:

1. Both ephedrine and pseudo-ephedrine have a pressor action, the former being more powerful than the latter.
2. Pseudo-ephedrine is less toxic than ephedrine.
3. The dilator action of pseudo-ephedrine on the bronchioles is nearly as marked as that of ephedrine; and so is its constricting action on the mucous membrane of the nose. Both ephedrine and pseudo-ephedrine are useful in asthma, the latter having the advantage of producing fewer "side-effects."
4. Pseudo-ephedrine is more powerfully diuretic than ephedrine.

Apart from observations on a few ambulant cases of asthma, the blood pressures in which were subnormal, we have not explored the pressor action of these drugs. They have recently been carefully compared in patients by Dimson[1] and by Monro.[3] The findings of these workers, and our own so far as they go, support the conclusions of other investigators that the pressor action of pseudo-ephedrine is much less than that of ephedrine.

Our inquiry has been directed mainly to the action of ephedrine and pseudo-ephedrine in asthma, in "chronic bronchitis," and in enuresis. In the course of this work we have naturally had an opportunity of comparing the toxicity of the two isomers, and of observing incidentally their supposed diuretic actions. It may be said at once, however, that, although we have not used pseudo-ephedrine intentionally as a diuretic where such was indicated, we have obtained no evidence in our inquiry that it acts in this way in patients with normal cardio-vascular systems. None of our patients has complained of increased frequency of micturition when taking it; in fact, the converse has, in a sense, been true, for pseudo-ephedrine has been used with success in the treatment of enuresis in children.

* A report to the Therapeutic Trials Committee of the Medical Research Council. One of the authors (J. B. C.) received a grant towards the expenses of this work from the Science Committee of the British Medical Association.

Comparative Tests in Spasmodic and in Bronchial Asthma

For the purposes of this study we have classified our asthmatic patients on the basis of symptoms and routine clinical examination into: (*a*) "spasmodic" cases—that is, cases without gross evidence of bronchitis, etc.; and (*b*) "bronchial" cases—that is, cases with gross evidence of bronchitis, etc.

SPASMODIC ASTHMA

Twenty-four cases of this type were treated successively with ephedrine and pseudo-ephedrine, with an interval between the two drugs, during which the patients were treated with inert tablets made to resemble those previously given. Ten of the patients were under the age of 10. Both ephedrine and pseudo-ephedrine were ordinarily given at bedtime in doses of 1/4 to 2 grains, according to the age of the patient and the reactions obtained: when necessary, however, the same dose was repeated in the morning on waking, or later in the day. The results may be summarized as follows: Five had no bad attacks during the whole period of observation. Fifteen were relieved of wheezing and dyspnoea both by ephedrine and by pseudo-ephedrine, but pseudo-ephedrine was less effective than ephedrine in relieving definite attacks. Four were relieved of wheezing and dyspnoea by taking pseudo-ephedrine every night. In these, pseudo-ephedrine was also effective in the attacks when they appeared, but less promptly than ephedrine in the same dosage.

BRONCHIAL ASTHMA*

The results in thirty-seven cases of this type were as follows. In eight, pseudo-ephedrine was not effective for acute attacks, though useful for chronic dyspnoea and wheezing. In nine, pseudo-ephedrine, in addition to its use in preventing attacks, was also effective in relieving slight attacks. Twenty patients had no severe attacks, and in fifteen of these pseudo-ephedrine, taken regularly, relieved nocturnal dyspnoea and wheezing.

It should be mentioned, incidentally, that thirty-two of our cases of spasmodic and bronchial asthma were also under treatment with sodium iodide throughout the inquiry. We have found this drug of definite value in the prophylaxis of asthmatic attacks. Our usual procedure is to give 30 grains at 6 p.m. and at bedtime. To more obstinate cases we also give 30 grains sodium iodide intravenously once a week. Complete immunity from severe attacks may be obtained for many months with this medication, but, in our experience, most patients need an additional safeguard in order to obtain freedom from nocturnal wheezing and dyspnoea. We have found both ephedrine and pseudo-ephedrine useful for this purpose, pseudo-ephedrine being frequently the more satisfactory on account of its lower toxicity. Of nineteen cases which gave a definite response to pseudo-ephedrine and were not under the influence of sodium iodide, twelve had relief from nocturnal dyspnoea when taking pseudo-ephedrine 1/2 grain regularly at bedtime; the remainder required 1 to 2 grains, according to the severity of their symptoms.

* In this group we have included, as stated, all the cases under observation in which asthmatic attacks were associated with gross evidence of chronic bronchitis. But, in the view of one of us (J. B. C., *Amer. Journ. Med. Sci.*, 1933, clxxxvi, 504), the disorder known as "chronic bronchitis" itself needs reviewing and reclassifying in relation to modern knowledge. For the accurate sorting out of the different conditions at present labelled "chronic bronchitis" on clinical grounds, a lipiodol examination of the lungs is necessary.

It may be said generally that pseudo-ephedrine is useful in any case of wheezing and dyspnoea due to spasmodic constriction in the bronchial tree. We have also found it of value in the chronic "exertion" dyspnoea associated with severe fibrosis of the lung, as in tubercle or bronchiectasis.

Toxic Effects of Ephedrine and Pseudo-Ephedrine Compared

Toxic reaction to ephedrine in small doses is more frequent than is perhaps generally realized. It leads many patients to delay taking the drug until the asthmatic attack actually appears—when ephedrine, compared with asthma, is regarded as the lesser of two evils. This reluctance to take ephedrine as a prophylactic is unfortunate, since experience shows that the greatest value of this drug is as a preventive. If, therefore, pseudo-ephedrine could be shown to be nearly as good as ephedrine in this respect, while being less toxic, it would have obvious clinical value in the routine treatment of asthma.

We found that the toxic symptoms produced by ephedrine and by pseudo-ephedrine were similar in nature, but differed in frequency of occurrence and in the dosage necessary to induce them. Thus in sixty-one asthmatic or bronchitic patients treated with both drugs thirty-two showed hypersensitivity to ephedrine, sixteen to pseudo-ephedrine, and thirteen to both. Of the thirty-two cases which showed hypersensitivity to ephedrine three had toxic symptoms with doses of 1/4 grain, twenty-three with 1/2 grain, and six with 1 grain. Of the sixteen cases which were hypersensitive to pseudo-ephedrine one had toxic symptoms with doses of 1/4 grain, eleven with 1/2 grain, and four with 1 grain.

Palpitation of the heart was the most frequent unpleasant reaction both with ephedrine and with pseudo-ephedrine. After that came insomnia or restlessness during sleep. Nausea or gastric pain was the most frequent unpleasant reaction in children under 14. Then came certain nervous symptoms: "queer head," giddiness, trembling, sweating, "cold and sleepy feeling," "cramp" in fingers, tingling feeling in skin.

In fifteen cases pseudo-ephedrine seemed to have had an equal physiological effect with ephedrine in the same dosage. Of these, seven showed slight toxic or unpleasant reactions, distributed as follows: four with ephedrine, three with both ephedrine and pseudo-ephedrine, none with pseudo-ephedrine only. The common dosage in these cases was: in ten cases, 1/2 grain, in five cases 1 grain. One of the fifteen had toxic symptoms at first after ephedrine, but after a course of pseudo-ephedrine toxic symptoms seemed to be less marked with ephedrine. In fourteen cases ephedrine was more effective than pseudo-ephedrine, but produced more unpleasant reactions. In these the doses of pseudo-ephedrine were double those of ephedrine, and one patient, a boy of 6, had slight toxic reaction (restless night) after pseudo-ephedrine 1/2 grain. There is no doubt that in order to get the same physiological effect pseudo-ephedrine must ordinarily be used in larger doses than ephedrine. As a general rule 1/2 grain is a usual dose of ephedrine for an adult, whereas 1 or 2 grains of pseudo-ephedrine has to be given to produce a corresponding physiological effect.

Four cases appeared to be resistant to pseudo-ephedrine though they responded well enough to ephedrine. In one of these pseudo-ephedrine produced unpleasant reactions. Forty-four cases of the total were definitely responsive to pseudo-ephedrine in doses of 1/2 to 2 grains, but only in fifteen could it be maintained that pseudo-ephedrine had an equal physiological effect to ephedrine, and seven of these had slight toxic symptoms with one or both drugs. In nine cases where pseudo-ephedrine was effective but less so than ephedrine no toxic or unpleasant reactions occurred with either drug.

Ephedrine and Pseudo-Ephedrine in Enuresis

We have recently treated cases of enuresis with ephedrine, either alone or in conjunction with an alkaline belladonna mixture, and have obtained very satisfactory results. Our attention was first called to this treatment by a letter in the *British Medical Journal* by L. E. Parkhurst.[4] He gave ephedrine 1/2 grain at bedtime to children aged 10 to 12, and claimed that the treatment was "almost specific." In view of the response to pseudo-ephedrine in the majority of our cases of asthma it seemed of interest to determine whether this isomer was also effective in enuresis.

Our experiments with pseudo-ephedrine were carried out on children varying in age from 3 to 13, all of whom were attending a hospital out-patient department. Altogether twelve patients were treated during periods varying from one to four months. Of these cases eight were controlled by ephedrine 1/4 grain given at bedtime without other treatment, and four were more severe and needed ephedrine 1/2 grain at bedtime with an alkaline belladonna mixture by day. One of these four appeared to depend more upon the belladonna mixture than upon the ephedrine, though the giving of ephedrine 1/2 grain at bedtime seemed definitely to increase the power of control; the same applied when pseudo-ephedrine 1 grain was given at night.

Speaking generally, the substitution of pseudo-ephedrine for ephedrine in the same dosage slightly decreased the extent of control, maintaining it at a somewhat lower level. Thus in seven of the eight cases controlled by ephedrine 1/4 grain pseudo-ephedrine had to be given in doses of 1/2 grain to produce a satisfactory result. Only one of these responded to 1/4 grain of pseudo-ephedrine. Similarly, of the four cases on ephedrine 1/2 grain plus the alkaline belladonna mixture, two required 1 grain of pseudo-ephedrine plus the mixture; the other two kept well on 1/2 grain. One patient to whom no ephedrine had previously been given improved at once with pseudo-ephedrine 1/4 grain at night and responded completely to 1/2 grain. In three patients, who had incontinence by day as well as by night, an additional dose of ephedrine or pseudo-ephedrine was given in the morning with benefit. No symptoms suggesting intolerance were complained of by these patients or noticed by their parents after either drug. It appears, therefore, that effective doses may be given to children quite confidently, and pseudo-ephedrine may be considered a useful addition to the somewhat limited therapeutics of enuresis.

Conclusions

1. Pseudo-ephedrine is valuable as a gentle bronchial sympathetic stimulant sufficiently active to give relief in chronic cases of wheezing and dyspnoea.

2. It is a useful prophylactic against the nocturnal dyspnoea of asthma and against the dyspnoea of exertion in chronic bronchitis.

3. It does not effectively take the place of ephedrine, still less of adrenaline in acute attacks of asthma.

4. It is non-cumulative in its action, and produces fewer "side-effects" than ephedrine in the same or rather larger dosage.

5. Generally speaking, though not always, about double the dosage of pseudo-ephedrine is required to produce the equivalent physiological effect of a given dose of ephedrine.

6. In cases of enuresis in children pseudo-ephedrine is also useful, though perhaps not quite equal to ephedrine, which we consider to have high value in this condition.

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A NOTE ON THE TREATMENT OF ACUTE INFECTIVE ARTHRITIS OF THE KNEE-JOINT

BY

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When a case of acute infective arthritis of the knee-joint is progressing unfavourably, in spite of repeated aspirations of the joint fluid and immobilization of the limb with effective extension, arthrotomy is usually performed. Arthrotomy on the ordinary lines—by antero-lateral and postero-lateral incisions—frequently fails to arrest the spread of infection, and it then becomes necessary to sacrifice the limb to save the patient's life.

During the performance of amputation through the thigh for this condition many surgeons, and particularly

FIG. 1.

those who had experience of surgery during the war, must have been impressed by the frequency with which an abscess is found to have spread up the thigh, from the subcrureus pouch to the cellular plane in front of the femur, deep to the quadriceps extensor muscles. The resemblance to the spread up the forearm in pyogenic infections of the common flexor sheath is striking. Kanavel described this, and the method of treatment he introduced, by prompt and early drainage of the infected sheath and of the cellular plane deep to the flexor muscles by the lateral incisions he described, which effectively drain the cellular space lying in front of the pronator quadratus and interosseous membrane, has completely altered the prognosis of that serious lesion.

In acute infective arthritis of the knee-joint the deep extension of infection to the subcrureus pouch and thence to the cellular plane in front of the femur is comparable with the line of spread of infection in the forearm, and early treatment on similar lines is advocated: by early drainage of the subcrureus pouch through lateral incisions, the outer of which is continued freely upwards through the vastus externus down to the bone, to drain the cellular space above the subcrureus pouch in front of the lower third of the femur.

The opportunity of making a complete dissection of the limb occurred some three years ago, at a necropsy in which death was due to septicaemia following infection of the knee-joint through a small wound from the point of a pick. The involvement of the joint was not originally suspected, and the acute infective arthritis which supervened had not been arrested by the incisions which were made a week later through the capsule of the joint. At the necropsy little pus was found in the joint itself, but a huge abscess, which contained over a pint of stinking pus, was found to extend upwards from the subcrureus pouch, in front of the lower half of the femur, deep to the extensor muscles. I was impressed by the resemblance to the spread of pyogenic infections of the flexor sheath up the forearm, and resolved to try the effect of treatment on similar lines at the first opportunity, which curiously enough arose the same night, in the following case:

A. B., male, collier aged 59, admitted to the Royal Infirmary, December 25th, 1931. He had been struck on the front of the right knee by a sharp corner of a steel plate, ten days earlier. The small lacerated wound on the outer side and above the patella became infected, and three days before admission he developed an acute infection of the knee-joint with rigors, and became seriously ill. On admission, pus spurted from the sinus on movement of the limb and on pressure over the swollen joint. A moderate amount of pus

FIG. 2.

was evacuated when the joint capsule was opened by lateral incisions. The outer incision was prolonged up the thigh through the vastus externus down to the femur. Some ounces of pus escaped from the subcrureus pouch, and a large abscess cavity, which extended up the lower third of the thigh, in front of the femur, was opened by the free upward extension of the incision. The infected subcrureus pouch, and the large abscess which ran from it up the thigh, were drained with strips of dental rubber. The infection gradually subsided, and the patient left the Infirmary at the end of three months with a stiff knee-joint but a useful limb, and resumed light work three months later.

Since then similar treatment has been employed, with success, in the following cases:

C. D., female aged 3½, admitted to the Sheffield Royal Infirmary on July 25th, 1932, with a history of three days' illness. The right knee-joint and lower thigh were swollen, with some redness of the skin, fixation of the knee-joint, and great tenderness over the lower end of the femur. Temperature 103.5°; pulse 135. Radiograms showed no evidence of any focus of infection in the bone. Pus was found in the joint on aspiration (*Streptococcus haemolyticus*). The capsule of the joint was opened by lateral incisions below the patella, and drains inserted down to the capsule, by the resident surgical officer. The temperature and swelling persisted, and on August 11th the subcrureus pouch and an extension abscess up the thigh, in front of the femur, were freely opened by lateral incisions, and drained with strips of dental rubber. The temperature thereafter remained down and the general and local condition slowly improved. The ultimate result was excellent, and the photographs of the case show that the range of movement is practically normal (Figs. 1 and 2).

E. F., male aged 31, on December 5th, 1932, ran a narrow chisel into the left knee-joint just above the patella. He thought it was merely a flesh wound, and applied pink lint and a bandage. The knee became very painful and swollen during the night, and on the following day the local condition was worse and he had several rigors. On admission to the Royal Infirmary on December 7th, the joint was distended with the skin inflamed around the small punctured wound, with streaks of lymphangitis up the thigh. Pus was aspirated from the joint (*Streptococcus haemolyticus*), and ether, introduced through the needle, bubbled out through the punctured wound, which had penetrated the subcrureus pouch. The subcrureus pouch, which was distended with pus, was emptied and drained through lateral incisions, the outer of which was carried upwards down to the femur. The drains were removed on the third day, and the discharge from the incisions and the joint reaction gradually subsided. Immobilization with weight extension was continued for three weeks, and he left hospital at the end of six weeks. He attended the massage department for four months, and when discharged had regained 45 degrees of flexion movement at the joint.

G. H., female aged 55, admitted to the Royal Infirmary, March 6th, 1933, diabetic, developed acute infective arthritis of the left knee-joint following extensive cellulitis of the leg. Haemolytic streptococci and *B. coli* were grown on culture of the pus aspirated from the joint. The joint infection slowly subsided after transverse drainage of the subcrureus pouch and of the cellular space under the quadriceps through upward extension of the lateral incision. The limb was slung with weight extension, but the ultimate result was complete ankylosis of the joint with a fairly useful limb.

In the treatment of punctured wounds about the knee, when there is doubt as to whether or not the joint cavity has been penetrated, 2 or 3 c.cm. of ether should immediately be injected into the joint. Where the wound has involved the joint, the ether blows out from the external orifice, and immediate excision of the whole wound tract is indicated. The reaction set up by the ether in the synovial membrane appears to stimulate its resistance to infection.

Immobilization with suspension of the limb and weight extension and, if need be, repeated aspirations of the joint exudate are carried out. Where, however, acute infective arthritis of the joint develops or is already established when the patient comes under observation, the further steps described in the above article, on the lines of the Kanavel treatment of infections spreading up the forearm from pyogenic infection of the common flexor sheath, are recommended.

RENAL GLYCOSURIA MISTAKEN FOR DIABETES MELLITUS

BY

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AND

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It is over thirty years since Klemperer first drew attention to a harmless form of glycosuria, now generally known as renal glycosuria, but our clinical experience shows that it is still a frequent cause of diagnostic error. In this condition glucose appears in the urine at normal blood sugar concentrations because the renal threshold is low (under 0.17 per cent.), and not because hyperglycaemia exceeds a normal threshold, as in diabetes. The latter is particularly liable to be confused with cases of renal glycosuria in which the leak point is very low (under 0.100 per cent.) and the sugar excretion consequently heavy. Other reasons, too, contribute to mistakes in diagnosis, and unpleasant impositions of unnecessary treatment, as the following cases show.

CASE I

Mr. B., aged 47, underwent a complete examination before going abroad on an aeroplane expedition, for which perfect fitness was essential. Sugar was found in the urine, and a blood sugar curve was carried out, with the following result:

Time	Blood Sugar	Urine Sugar
	Per cent.	Per cent.
Fasting: 50 grams glucose	0.087	nil
½ hour after	0.063	0.4
1½ hours after	0.077	nil
2½ hours after	0.071	0.5

The subject was so anxious to go abroad, and the response to glucose was so unusual, that the man was suspected of having taken a dose of insulin before the test was made. When we repeated the curve (see table below) its general features were confirmed, showing a combination of an extremely high carbohydrate tolerance with a very low renal threshold.

Time	Blood Sugar	Urine	
		Sugar	Ketones
	Per cent.	Per cent.	
Fasting: 50 grams glucose	0.095	0.2	0
25 minutes after	0.125	0.8	0
40 minutes after	0.063	1.1	0
1½ hours after	0.111	0.4	0
2 hours after	0.108	0.5	0

CASE II

Mr. O., aged 30. Sugar was found in the urine during a routine examination when the patient had pityriasis rosea. He was at once put on a strict diet of 9 Lines—that was, 45 grams carbohydrate, 67 grams protein, and 135 grams fat—and, since the urine still contained sugar after six weeks, a blood sugar curve was performed, with the following results:

Time	Blood Sugar	Urine Sugar
	Per cent.	
Fasting: 50 grams glucose	0.116	
32 minutes after	0.176	+
64 minutes after	0.188	+
120 minutes after	0.148	

No record of acetone in the urine was made, but the curve was held to be definitely diabetic, as hyperglycaemia persisted after two hours, and diet was again prescribed. When first seen by one of us, after four months of rigid diet, the blood sugar was normal at 0.099 per cent. two hours after breakfast, and slight glycosuria was present, which suggested a low threshold. Full diet was then prescribed, and one month later the following absolutely normal, though irregular, curve was obtained.

Time	Blood Sugar	Urine	
		Sugar	Acetone (Rothera)
	Per cent.	Per cent.	
Fasting: 50 grams glucose	0.116	slight trace	very slight trace
½ hour after	0.087	trace	slight trace
1 hour after	0.137	1.5	0
1½ hours after	0.077	slight trace	0

It is probable that the first slightly abnormal curve was the result of the previous carbohydrate starvation, which produces *per se* a diabetic type of curve in a normal individual.

CASE III

Mrs. P. This woman had complained to her doctor of thirst and polyuria, and on examination large quantities of sugar were found, and a diet of about 100 grams carbohydrate a day was prescribed. After some weeks the thirst and polyuria improved, but the glycosuria persisted and a blood sugar curve was carried out.

Time	Blood Sugar	Urine	
		Sugar	Ketones
	Per cent.		
Fasting: 50 grams glucose	0.131	+	0
½ hour after	0. 67	+	0
1 hour after	0.155	+	0
1½ hours after	0.0.6	+	0
2 hours after	0.037	+	0

This curve was taken to be abnormal on the strength of the fasting level. No reference was made to the renal glycosuria, but shortly afterwards the patient was referred to the diabetic clinic at King's College Hospital for treatment. When first seen her blood sugar was 0.1 per cent., and her urine contained about 2 per cent. of sugar. Full diet was prescribed, and a few days later a blood sugar curve was obtained (see below), which showed a response to glucose approaching the "lag storage" type, with an unusually low threshold. The patient was discharged on full diet, and has since been untroubled by symptoms.

Time	Blood Sugar	Urine	
		Sugar	Ketones
	Per cent.	Per cent.	
Fasting: 50 grams glucose	0.097	3	0
½ hour after	0.200	3	0
1 hour after	0.162	3	0
1½ hours after	0.089	3	0
2 hours after	0.086	2	0
2½ hours after	0.089	3	0

CASE IV

Miss C., aged 24, a nurse in a provincial hospital, was discovered, during a routine examination, to have sugar in her urine. The test was repeated and diet prescribed. Later a blood sugar curve was done:

Time	Blood Sugar	Urine Sugar
	Per cent.	Per cent.
Fasting: 50 grams glucose	0.100	1.8
1 hour after	0.200	4.0
2 hours after	0.180	5.0

Here again the renal element was neglected, and the curve was taken to be abnormal because the effect of a period of previous carbohydrate restriction was neglected (see Case II). Treatment for diabetes was recommended, and a month later insulin was felt to be necessary, as the glycosuria persisted. Small doses were given at first, but later—as the urine was never free from sugar—larger doses were thought to be necessary, and the girl was finally discharged on 20 units b.d. After a year of treatment, with continuous glycosuria and frequent overdoses of insulin, she was admitted to King's College Hospital for investigation. Her diet, which had been 55 grams carbohydrate a day, was raised to 100 grams, and 34 units of insulin in the morning and 24 units in the evening were prescribed. It was appreciated next day that a low renal threshold must be present, as a heavy glycosuria was found with low normal blood sugars. Insulin was discontinued, and as a normal blood sugar level continued for three days a full diet was prescribed. (It is of interest that a strongly positive Rothera's test for ketone bodies was obtained on this patient for two or three days after insulin was omitted, but never at any other time.) After a week of full diet a blood sugar curve gave the following result.

Time	Blood Sugar	Urine	
		Sugar	Ketones
	Per cent.	Per cent.	
Fasting: 50 grams glucose	0.098	5.2	0
½ hour after	0.123	5.2	0
1 hour after	0.151	5.6	0
1½ hours after	0.142	6.4	0
2 hours after	0.142	7.9	0
2½ hours after	0.115	—	0

The patient was discharged on full diet and has remained perfectly well. Six months later the blood sugar curve never rose above 0.12 per cent.

CASE V

Male, aged 31. This patient is a perfect example of how renal glycosuria may be confused with diabetes. Towards the end of a very hot summer he complained of lassitude, slight loss of weight, thirst, and irritation of the penis. His country practitioner found over 5 per cent. of sugar in the urine. Treatment for diabetes was commenced without a blood sugar estimation. Starvation did not remove the glycosuria, and the patient was referred to one of us as a severe diabetic for insulin treatment. The urine was found to contain 3 per cent. of glucose and a high excretion of ketone bodies (strongly positive FeCl test), but the first blood sugar estimation gave a low normal figure of 0.082 per cent., and at this figure 2.5 per cent. of glucose was excreted. After two days' very full diet the following blood and urinary figures were obtained after 50 grams of glucose.

Time	Blood Sugar	Urine	
		Sugar	Ketones
	Per cent.	Per cent.	
Fasting: 50 grams glucose	0.085	2.5	
½ hour after	0.161	9.8	No ketonuria
1 hour after	0.166		
1½ hours after	0.150	7.1	
2 hours after	0.093		

The slight delay in the return to the fasting level, caused presumably by recent ketosis from dieting, was neglected in view of the otherwise normal curve. Full diet was prescribed, and perfect health has been maintained for five years, in spite of heavy and permanent glycosuria. The previous slight irritation of the penis has been prevented by frequent cleansing.

Discussion

Little discussion is necessary. All five cases illustrate very well the difficulties that may arise if the possibility of a low leak point is not considered in every case of glycosuria without typical symptoms of diabetes. Cases II and IV show the advisability of prescribing full diet for some days before a diagnostic blood sugar curve is done, and Cases III and V the dangers of treating diabetics without adequate blood sugar control. Even without blood sugars, suspicion should have been aroused in these cases, for glycosuria without symptoms and without acetonuria in a young adult is always suggestive of renal glycosuria, and is seldom found in diabetes mellitus.

Summary

Five cases of renal glycosuria are described which, for various reasons, had been diagnosed as diabetes mellitus.

A CASE OF ACUTE BILATERAL MASTOIDITIS

BY

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The following case of bilateral acute mastoiditis, complicating acute fronto-maxillary sinusitis due to the *Streptococcus haemolyticus*, is, I think, worthy of publication because recovery ensued in spite of the fact that, in addition to the above complications, the infection spread to the base of the left lung and the wrist-joint of the same side.

Case Report

A married woman when eight months pregnant developed an ordinary cold. Being a strong, healthy person she gave little attention to this, which was considered a trivial matter; nevertheless it left her with an irritable cough and a certain stuffiness of the nose. Three weeks later a septic spot developed on her chin; this was eventually opened and had entirely healed before labour set in. The latter was quite normal, and in due course the patient left the nursing home.

Almost from the beginning the patient complained of faceache on the left side; this grew worse and gradually spread until the entire left half of the face became very tender and could not bear pressure. The temperature began to rise at night, and the cough became more troublesome. On January 16th, 1934, three weeks after the confinement, I was asked to see the patient.

Examination

Pus was coming from the left frontal and maxillary sinuses. The middle and inferior turbinal bones on the same side were swollen and inflamed. Acute inflammation of both sinuses was diagnosed, and an exploratory puncture of the left maxillary antrum was made under nitrous oxide anaesthesia. I found the sinus full of thick, foul-smelling pus. I ordered menthol inhalations and hot fomentations for the frontal condition, and when I saw the patient two days later the pain and tenderness had considerably decreased. I again washed out the antrum, which now contained thin, watery, blood-stained pus.

Operation on Right Ear

The patient complained of earache on the opposite side—namely, the right. Inspection of the drum showed attic suppuration. The membrane was inflamed and bulging in the upper part, while it was more or less normal in the lower. Paracentesis was performed, and the patient was removed to a nursing home, as there was marked tenderness over the mastoid tip and I anticipated an extension of the disease into the bone itself. This proved to be correct, for the next morning the skin behind the ear was red and oedematous and exquisitely tender.

A conservative mastoid operation was performed. The bone was very thick, and contained abnormally large cells full of pus. I found it necessary to expose a large portion of the dura, the lateral sinus from well behind the genu, and the bulb. The posterior wall of the external auditory canal was removed down to the bridge, leaving the latter structure. The post-aural incision was closed, and the cavity drained through the meatus. At the same time I did an endonasal antrostomy. Some of the pus from both cavities was collected and sent for a pathological examination.

The following day, January 22nd, the condition of the right ear had considerably improved, but I was informed that the patient had had no sleep owing to the pain which had suddenly developed during the night in the left ear. This necessitated a hypodermic injection of morphine. Examination of the ear revealed acute attic suppuration. The appearances were exactly similar to those seen in the first instance, when the disease started in the right ear.

It was then that I received the following report from the pathologist.

Examination of Pus from Antrum

The specimen was much admixed with blood, but direct films showed the presence of some pus cells (polymorphs) in addition to the blood cells, and a number of Gram-positive micrococci, mostly in pairs, but some of them in chains, were also to be seen. Pure growths of haemolytic streptococci of the *pyogenes* type have developed.

Opinion.—A heavy infection with haemolytic streptococci of the *pyogenes* type is present.

Mastoidectomy on Left Ear

This report, together with the rapid spread of the disease to the other ear, indicated the seriousness of the case. I performed a paracentesis on the left side that afternoon. Pus mixed with gas escaped under pressure, and the hissing noise made by the latter as it came away could be heard by those around. A large dose of anti-streptococcal serum was given at the same time. This was repeated on the following evening, and a third dose was administered three days later.

On January 23rd the patient's condition was worse. There was marked tenderness over the left mastoid, and on the following day I performed a mastoidectomy on the left ear. The condition found was similar to that on the right side, but much more advanced. The mucous lining of the mastoid cells had assumed a polypoid appearance, and as each cavity was opened the diseased membrane shot out like peas from a pod. The tegmen was entirely eaten through, and watery pus bathed the dura. It was necessary to expose a considerable area of the meninges to rule out an extradural abscess. The lateral sinus and bulb were also laid bare. In this case the radical operation had to be performed as the structures in the tympanic cavity were destroyed. The post-aural incision was closed and the ear drained through the meatus.

Immediately after the first operation it was noticed that the cough seemed to get worse. The sputum was blood-stained and contained pus. The report from the pathologist showed that the same organism, the haemolytic streptococcus, was present. Examination of the chest disclosed that the base of the left lung was affected, but the disease tended to be localized. This cleared up in about a fortnight, and the patient appeared to be none the worse for it. When I saw her in the first instance the left wrist was very inflamed, painful, and swollen. There was complete loss of power in it, and the forearm had to be kept in a sling. After the antrum was opened and drained this subsided. It is now quite normal, except for a little shooting pain at times.

Convalescence was uneventful and recovery rapid. The maxillary antrum was the only thing that caused any inconvenience. A viscid blood-stained discharge continued in spite of repeated washings and instillations of various antiseptics. I had this examined again, and it was found to contain the haemolytic streptococcus. It was only after an autogenous vaccine had been made from the discharge and a course of injections given that the antrum cleared up. The patient now enjoys perfect health, and with the exception of a slight diminution of hearing on the left side, on which the radical operation was performed, she suffered no inconvenience whatever.

A blood count was twice made. The first, immediately after the second operation, was as follows: red cells, 2,700,000 per c.mm.; leucocytes, 10,160 per c.mm., of which 80 per cent. were polymorphs; haemoglobin, 46 per cent. The second, taken ten days later, showed: red cells, 3,720,000 per c.mm.; leucocytes, 8,040 per c.mm., of which 70 per cent. were polymorphs; haemoglobin, 65 per cent.

The anaesthetic given in the first operation was evipan sodium by intravenous injection, and in the second nitrous oxide and oxygen. Dr. M. Hudson administered the anaesthetic on both occasions.

I wish to thank Dr. John Oliver for his reports on the pathology of the case, and also Dr. Saxby Willis and Mr. Buckland Jones for their advice.

THE RADIOLOGY OF LIVING ANATOMY*

BY

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Sir George Newman's speech at the opening of the Annual Congress of the British Institute of Radiology in 1932 contained the following statement:

"When I was trained as a medical student, a great many years ago, I had to learn my anatomy on the dead body. But we may now, by means of *x* rays, learn in the ideal way (which we thought of in those far-off days as impossible to reach) of the anatomy of the living body; ideal, because all the tissues of the human frame are different in the dead body from what they are in the living. The *x* ray has, therefore, real weight in the study of human anatomy, of anatomy, not as it lies in dust and ashes, but as a living entity, the crown and summit of nature, the greatest thing as far as we know that has been created, on this planet at all events, if not in the whole universe."

Radiological study of the living body has contributed considerably to our knowledge of anatomy, but such knowledge must be regarded as supplementary to that which can be obtained in the dissecting room only. It is dependent on the relative density of the tissues or organs and their contents to *x* rays, and is in fact a study of shadows. While in the case of radiographs of the bones or of the lungs detail of the delicate structure can be portrayed, in most cases we have to base our knowledge on the internal or external contour of the organ. By the aid of substances of a lesser or greater density than the surrounding tissues we are able to show the outline of the interior of every tubular viscus. Finally, by the aid of the fluorescent screen, the movements of the viscera and skeleton can be followed.

Since radiology is now recognized as an essential method of examination, the extent and usefulness of which increases with improved technique each week, it becomes imperative for the medical student to appreciate the radiographic appearance of the normal anatomy. Unless the student or clinician has made himself familiar with the radiographic appearances, no matter how intimate his knowledge of dissecting room or surgical anatomy may be, he will be liable seriously to misinterpret the shadows produced by *x* rays. It is not suggested that the student should have an extensive course in radiology added to the already crammed curriculum. That it would have to be an extensive course if the whole subject were taught becomes obvious when we see how radiology has spread its tentacles into every branch of clinical medicine. So vast is the data already collected, and so rapidly are further advances being made, that it is certain radiologists of the future will have to specialize in the study of one system only if progress is to continue.

Radiology of the living anatomy may be learnt from: (1) radiographs taken in standard positions of patients of known age and sex; (2) serial radiographs taken at intervals of fractions of a second, minutes, days, weeks, or months to show development; (3) fluoroscopic examination; (4) cine-radiography. The student must first confine himself to a study of radiographs of normal structures at different age periods from infancy to old age, taken in standard positions. The variations to be seen in these, of the skeletal system alone, will indicate the extent of the knowledge required for correct interpretation. In no part are the variations of form more apparent than in the skull, in which we never see the same radiographic appearance in two individuals, a factor which would be infallible for criminal records.

Obviously it will be impossible to give a very extensive account of the variations met with, and I shall confine myself to a demonstration of a few of the radiographic appearances of normal structures which have led to serious misinterpretation.

Radiography of the Skull

Radiographs of the skull must be taken with the central ray in the sagittal plane; the slightest obliquity of the skull respective to the central ray may result in the production of a radiograph in which the dense structure of the base obscures the normal accessory sinuses on one side, and this may lead to the error of diagnosing that the sinus is occluded. The dense shadow of the petrous portion of the temporal bone may be projected through the plane of the antrum, and its straight upper surface may be misinterpreted as a fluid level. The most serious results have followed the misinterpretation of shadows of pathological processes of the maxilla and mandible as the normal maxillary antrum or foramina. Examples have been published of septic foci which have been so missed in spite of repeated *x*-ray examinations, and in some instances the health of the patients has been seriously affected.

An unusual instance of misinterpretation of the normal was submitted to me three years ago. A child with a swelling at the angle of the mandible was *x*-rayed, and the radiograph was misinterpreted as showing a sarcoma. A surgeon was consulted, and resection of the involved bone was decided upon. Immediately before the operation the surgeon asked me if I could give him an indication of the boundary of the tumour, so that he could gauge what length of bone he must remove from the crest of the ilium to form a graft. It was demonstrated to him that the radiograph showed normal structures only; the shadow of the hyoid bone, which was projected against the mandible, had been taken for that of a sarcoma. It was discovered a few days later that the swelling was due to mumps.

When I was recently confronted by a dental surgeon's misinterpretation of the shadow of the pharynx as an abscess cavity with a sinus (the shadow due to the epiglottis) tracking forwards, I realized how necessary it was for the individual using *x* rays to learn the radiological anatomy of the normal before attempting to interpret pathology.

The Thorax

When radiographs of the thorax in inspiration and expiration are carefully compared it becomes apparent at once that radiographs must always be made in the same phase of respiration if they are to be compared one with the other. Radiographs of the thorax also indicate another important feature—namely, that those structures which are in close contact with the radiographic film appear denser than the surrounding tissues (owing to the fact that this area is, in this way, screened from secondary radiation), and often show a fairly well defined periphery. The significance of this fact is illustrated in the following case.

A patient was radiographed at a tuberculosis clinic, and a diagnosis of bilateral spontaneous pneumothorax was made. Later, when my opinion was sought, I suggested that further radiographs should be taken: one with reduced pressure against the breasts, and another with the film barely touching the patient. These proved that the abnormal shadows were due to the contact cutting out secondary radiations and consequently reducing the density of the protected part.

Contact of the male genital organs with the film results in the appearance of well-defined opacities on the radiograph, and these shadows have been misinterpreted as stones. Irregular calcification in the thyroid,

* Abstract of paper read to the Rugby and District Medical Society, and illustrated throughout by lantern slides.

cricoid, and costal cartilages also results in the appearance of opacities on the radiograph, which have been misinterpreted as evidence of tuberculosis, or, in the case of the lower costal cartilages, of stones in the gall-bladder or kidney. It is not unusual to hear that the normal appearance of the acromio-clavicular joint has been misinterpreted as showing a fracture. The importance of adopting standard positions in which the whole of the structure can be projected on the radiograph is illustrated by radiographs of the wrist or hip-joint, in which severe fractures may be masked by the overlapping of shadows of other structures.

Alimentary Canal

Little can be learnt of the anatomy of the alimentary canal by the plain radiograph. The lumen of the structures must be filled with some media, the density of which is less or more than that of the surrounding structures. It is the common practice to use a dense medium, such as barium. It is essential, however, before an opaque medium is introduced into any part of the body that a preliminary radiographic examination should be made, so as to be quite sure that no abnormal shadows exist which might be completely obscured by the opaque material. The essential part of the examination of the alimentary canal involves fluoroscopy, of which a brief account is given later. The gall-bladder can be visualized by absorption or injection into the portal circulation of such substances as sodium tetraiodophenolphthalein, which, being excreted by the liver in the bile, make the latter denser than the surrounding structures, it can therefore be shown on the radiograph. In this examination we are dependent in some cases on so-called negative shadows—that is, gall-stones less in density than the dye-containing bile. Such negative shadows may be simulated by the shadows of bubbles of gas in the duodenum being projected into the gall-bladder shadow.

Serial Radiographs

A single radiographic examination may, in health or disease, demonstrate clearly the outline of the structures under observation, but more information of the structures can be obtained by taking a series of radiographs with an interval of time (depending upon the nature of the examination) between each. If we are studying the movements of the heart, stomach, or small intestine, the interval between each radiograph must be very short, but if we are concerned with the development of the skeleton an interval of a month would suffice. The influence of sex, food, medications, ill-health, and endocrine disorders in the growth of the skeleton can be determined in this way. In the study of pathology this method of examination is invaluable, and provides evidence which cannot otherwise be obtained. Too often further radiography is neglected if the first examination has not revealed any abnormality.

Fluoroscopic Examination

When the student has made himself familiar with the radiographic appearance of the normal anatomy he will be in a position to appreciate the more quickly the shadows projected on the fluorescent screen. The time allowed for screen examination is necessarily limited, owing to the danger of exposure of the operator and patient to the *x* rays. The interest shown by students in the screen examination of their colleagues is sufficient testimony of the value of this method for bringing further stimulation to the study of anatomy.

Many of the features learnt from a study of radiographs will be readily noted by the student during the screening, but it is the observation of movement of the viscera and their contents which excites the greatest interest. Such examinations teach the student the position of the viscera in the erect, supine, or prone position. The movements of opaque meals through the alimentary canal produce a living picture, which is of the greatest contrast to that exhibited in the dissecting room, and cannot fail to impress him.

Cine-radiography

The very limited time permissible during screening, and the limited area which the observer can watch, make this method of demonstration by no means ideal for teaching purposes. What we need is a carefully edited cine-radiographic film study of the viscera, an ideal which we are rapidly approaching. The desirability of this method of demonstration was recognized by Dr. John MacIntyre of Glasgow as early as 1896—that is, a few months after Röntgen had discovered *x* rays. He exhibited a cine-radiograph film 40 feet in length, showing the movements of the bones of a frog's leg, to a meeting of the Glasgow Philosophical Society in that year. In the *Archives of Skiagraphy* of April, 1897, he described his experiments with direct and indirect cine-radiography. This pioneer work has been followed up by other workers in different countries.

In this country Dr. Russell Reynolds contributed a paper in 1925 describing his experiments with indirect cine-radiography. (Since writing this Dr. Russell Reynolds has informed me that he has continued his experiments and now has a reliable technique which is relatively inexpensive.) More recently Robert Janker at Bonn advanced the method to such an extent that we reasonably expect soon to use cine-radiography in teaching the radiology of living anatomy. Briefly the two methods are as follows.

Direct Cine-radiography.—The patient is placed in front of an *x*-ray tube and against a leaded screen containing a window opposite the area to be radiographed. Behind the screen a large roll film of the necessary size is fixed on rollers, and the timing of exposure so devised that at least sixteen exposures per second can be made on the rapidly changing film surface. From the film obtained reduced films, capable of fitting into a cine-projector, would have to be made. The large contact films permit one to study the changes in form perhaps rather better than the small films obtained in the indirect method, but the cost is very considerable, and while the method may be used for the production of standard teaching films it can never come into general use in radiographic examination. Simpler devices have been made which enable us to take a dozen or more exposures within a short time, and these are useful in the examination of the stomach and duodenum. A modification of this direct method for recording the movements of the heart was described by Robert Knox in 1925.

The Indirect Method.—This method depends on a cine-photographic record of the images produced on the fluorescent screen. The screen image must be sharply defined, and there must be no afterglow. By this method Janker has been able to make cine-radiographic films which are little inferior to those obtained by the direct method but at a trifle of the cost. The intervals between each exposure will determine the rapidity (when shown in the cine-projector) of the movements of the structures examined. We may compare the cine-photography of growing flowers—in which there may be an interval of several hours or days between each exposure, but when projected the growth, which has taken several weeks and which was imperceptible to the eye, is completed in a few minutes—with the cine-photography of the horse-race during which many exposures per second are made, but when projected at the normal film rate appear as a slow-motion picture in which even the muscular contractions can be followed.

Both these methods may be applied to cine-radiography of the human body, and should solve many of the problems of visceral movement. The movements of the heart in diastole and systole during expiration and inspiration could be so analysed. The peristalsis of the alimentary canal could be determined with greater accuracy and films obtained which would be preferable to fluoroscopic screen demonstration for the teaching of students. By this means the movements of joints can be studied better than in any other way. Two years ago Professor Lockhart, Fowler, and I conspired together to show the movements of the spine. Our efforts are to be seen in Film No. 238 of the Kodak Medical Film Library. We determined, in this manner, that extension of the spine is greater than flexion, and that the greatest range of movement takes place in the lumbar area, the least in the dorsal. This was demonstrated in a girl who was able to bend backwards and place her head between her thighs. The extraordinary mobility of the lumbo-sacral joint was also demonstrated. In a woman, aged 34, I showed that, while with flexion of the spine the anterior surface of the sacrum formed an angle of 170 degrees, with the line of the anterior surface of the lumbar vertebrae with extension the angle had been diminished to 100 degrees.

Clinical Memoranda

TREATMENT OF PANCREATIC CYSTS

I recently published[1] an account of a case in which, in a male patient, I successfully anastomosed a persisting sinus, following external drainage of a pancreatic cyst, with the anterior surface of the stomach. This operation was rendered necessary on account of the excoriation of the skin of the anterior abdominal wall by the active pancreatic fluid discharging from the sinus. The result was so satisfactory that when I encountered my next case I decided to make an anastomosis between the cyst and the stomach at the first operation, and so save the patient several weeks or even months of discomfort resulting from that constant discharge of irritating fluid over the abdominal wall which invariably follows external drainage. The result exceeded my expectations. The abdominal incision healed by first intention, and the patient left hospital in three weeks. She has been seen several times since, and on October 30th, 1933, she was examined clinically and by radiography, but no sign of the cyst could be made out.

A woman, aged 50, was admitted into the Cardiff Royal Infirmary with a history of intermittent attacks of indigestion for four to five years. On July 11th, 1933, she had sudden severe pain in the upper abdomen lasting from two to three days. Examination revealed a large tense swelling in the upper abdomen, with the stomach and transverse colon running across its anterior surface.

The abdomen was opened through a right paramedian incision, and the cyst exposed by a two-inch incision in the gastrocolic omentum. An incision half an inch long was made in the cyst, and a catheter quickly introduced and secured by a purse-string suture previously inserted. The cyst was emptied and repeatedly washed with saline, through the catheter. The fluid first drained from the cyst contained altered blood from a recent haemorrhage, and this may have accounted for the severe attack of pain on July 11th. The catheter was then removed and the anastomosis made between the cyst and the anterior surface of the stomach near the greater curvature. A clamp was used on the stomach, but not on the cyst. The actual operation was performed in the same way as a gastro-enterostomy. To avoid the possibility of obliterating the opening during the suturing two devices were employed: (1) the sutures were interrupted in three or four places; and (2) a piece of rubber tubing one inch long and a quarter of an inch in diameter was inserted into the two openings, after putting in the posterior halves of the sutures. When the sutures were completed the tube was pushed into the stomach. The abdomen was closed without drainage.

As the posterior surface of the stomach is adherent either to a true or to a pseudo-cyst of the pancreas, it might be suggested that it would be easier to make an opening in the stomach anteriorly, and then to make a stab opening through the adherent walls of the stomach and cyst. The same procedure might be carried out in the opposite direction after opening the cyst. There are, however, at least two theoretical objections to these modifications of the operation actually performed: (1) the stomach contents might enter the cyst and possibly give rise to complications; and (2) they resemble a perforation of the gastric ulcer into the lesser sac too closely to be undertaken without serious consideration, in view of the apparent safety of an anterior anastomosis.

I am indebted to Dr. Owen Rhys, radiologist to the Royal Infirmary, for the taking of the radiographs.

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[1] *British Medical Journal*, April 15th, 1933.

INJURY TO THE CERVICAL REGION

The following case of injury to the cervical region presents some unusual features.

A man aged 24 was brought into hospital at 11.45 p.m. on August 30th, 1933, having been run into by a motor cyclist about half an hour earlier while helping to mend a puncture, his own machine lying close by. He landed with the three machines on top of him. There was no loss of consciousness, and the only apparent injury was a compound fracture of the right tibia and fibula, and some bruising of the left arm. The actual wound was half an inch long, and was bleeding freely; this was dressed, and the patient was put to bed with his leg on a back splint. The following day his general condition was good, but his temperature was 101.6° F. He said he felt well. He had no headache, his pupils were equal and reacted briskly to light, the tendon reflexes of his arms were present and equal, and those of his left leg were normal. The condition of his leg was quite satisfactory, and a stitch was put in the wound.

On September 1st, having slept well, he ate a good breakfast and appeared quite fit, except that his temperature was 100.4°. At about 10.30 a.m. he became strange in his manner. He answered questions as though not quite sure of what was being said, and he was found sitting in bed hanging his sound leg over the side. His expression appeared vacant. He said he had no pain or headache. His face was very flushed; his pupils were equal and reacted briskly to light, but were moderately dilated. By 12 noon he was only semi-conscious, and was incontinent of urine; by 2 p.m., thirty-nine hours after the accident, he was quite unconscious, lying on his back with his arms flexed across his chest. At 7 p.m. a crop of petechial haemorrhages was first noticed, symmetrically distributed on both shoulders, from first below the clavicle in front to the spine of the scapula behind, just encroaching on the upper arm; there was also a superficial haematoma spreading up the back of the neck to the occiput. The patient was sweating profusely on his face and neck; his temperature was 100.8°, his respirations stertorous and increased to 30, and his pulse 120, with volume and tension good. He was incontinent of urine, his bladder not being distended. He could not be roused, but he would take drinks. He was still lying with his arms flexed across his chest.

On September 2nd he did not seem to be so deeply comatose. His breathing had been Cheyne-Stokes in character at times during the night, but was now regular again, though stertorous. There were a few more petechial haemorrhages, still limited to the same area; there was no stiffness of the neck. The following day his condition was much the same. A lumbar puncture was performed, the fluid being quite clear and under normal pressure. On September 5th his general condition was much weaker. He would only drink at times, and was obviously dying. A

further lumbar puncture was performed; the pressure of the fluid was slightly increased, and the analysis was: total protein, 45 mg.; total cells, 30 to 35 per c.mm.; dextrose content normal; culture sterile. The patient died on September 6th, seven days after the accident, having been unconscious for five and a half days.

A post-mortem examination showed the following: abdominal organs and heart normal; lungs congested; brain normal, no haemorrhage into its substance, and no extradural haemorrhage. It was noticed that the dura bulged just where the brain stem entered the cervical canal. On further investigation a blood clot was found between the bone and the dura mater in the upper cervical region laterally, not extending to the base of the skull. The lower limit was not investigated. The cervical vertebrae were exposed posteriorly, but no gross fracture was seen. The fracture of the leg bones was quite healthy. The interesting features of this case were: the petechial rash, sweating, temperature, and unconsciousness.

CAUSE OF DEATH

The anatomy of the region may help to show the cause of death. The vertebral arteries run up one on each side of the vertebral foramina from the sixth cervical to the axis. They then turn upwards to the foramina in the atlas. After passing through these they run backwards, piercing the posterior occipito-atlantoid ligaments and the dura mater to enter the cranium through the foramen magnum. In the vertebral foramina they are surrounded by a plexus of veins and branches of the sympathetic, and lie in front of the cervical nerves. The lateral spinal branches run through the intervertebral foramina into the vertebral canal and divide into (*a*) spinal branches ramifying on the backs of the vertebral bodies, and (*b*) medullary branches to the cord and membranes. The dura mater of the cervical canal is loosely adherent to the bony wall by areola tissue, and is not so firmly attached as inside the cranium. The position in which the patient lay with his arms flexed across his chest points to irritation of the sixth cervical nerve. The blood clot was seen at the level of the first cervical nerve, and so presumably extended down from C1 to C6. The petechial rash, occurring in the cutaneous distribution of C3 and C4, was probably due to irritation of these nerve roots, and this phenomenon has been observed in compression of the cervical cord. The sweating was mainly confined to the face and neck, and the pupils were moderately dilated; both were due to irritation of the cervical sympathetic.

Hyperpyrexia is known to occur in fractures and fracture dislocation of the cervical region. This is far removed from the recognized heat-regulating centre of the corpus striatum and the pons, and is also too low for the medulla to play any part in its production. An animal from which the sympathetics in the neck have been removed is unable to adapt itself to changes of temperature, so that irritation of the cervical sympathetic may have been the cause of the pyrexia. The only explanation I can offer of the cause of the mental changes and of the unconsciousness, which were present for six days before death, is that the vertebral arteries themselves were compressed by the haematoma either in the atlanto-occipital ligaments or within the cervical canal, giving rise to cerebral anaemia.

Death was due to haemorrhage from a medullary or spinal branch of the vertebral artery compressing the spinal cord above C4 and so paralysing the phrenic nerves.

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Reviews

THE ANAEMIAS SURVEYED

Dr. JANET VAUGHAN describes her book on *The Anaemias*[1] as an attempt to review the present position of knowledge as regards anaemia. She has been fortunate in having the assistance of Professor H. M. Turnbull, who has written the descriptions of the normal and pathological anatomy of blood formation. Only those who have essayed a similar task will appreciate the amount of study, of thought, and of personal research which have gone to the making of this short book. It is a compact, critical, and up-to-date survey, which will be welcomed by the large and increasing number of workers who are interested in the advancement of knowledge in diseases of the blood.

In the bibliography reference is made to between three and four hundred papers, the great majority of which have appeared during the last ten years. This has been a period of revolutionary change in haematology, but though there may be disagreement about details, there will be general agreement with the main plan sketched out by Dr. Vaughan. In the opening chapter normal erythropoiesis is discussed, and the normal values of red cells and haemoglobin and other haematological data are summarized, special attention being paid to the size and haemoglobin content of the red cells. The anaemias are then classified into (1) the dyshaemopoietic anaemias due to failure or abnormality in blood production, (2) the post-haemorrhagic anaemias due to abnormal loss of blood, and (3) the haemolytic anaemias due to excessive destruction of blood in the organism. In the large section of the book devoted to the analysis and description of the anaemias due to deficiency of substances essential to the nutrition of the bone marrow we traverse what has now become familiar ground. Less familiar, and for that reason perhaps less convincing, are the suggestions that the severe anaemia sometimes associated with metastases in the bone marrow may be a deficiency anaemia, the cancer depriving the haemopoietic cells of necessary food factors; or that acholuric familial jaundice may be due primarily to some disturbance in the metabolism or nutrition of the red cells.

The book is not intended to be a primer on haematology, and conditions such as leukaemia and the haemorrhagic states are discussed only in so far as they involve the erythron. It is a monograph for the research worker, the pathologist, and the consultant physician, who will find in it a mine of carefully documented information, which is presented clearly and interestingly, and which cannot fail to stimulate haematological research.

LATENT SYPHILIS

Essays on *Chronic and Familial Syphilis*,[2] by GRIFFITH EVANS, should cause a considerable flutter in medical dovecotes, for the author has the courage to tell us that we are constantly missing the diagnosis of syphilis through being so hidebound and blind. He points out that the disease is one of the lymphatic system first and last, and that consideration of this fact will explain many of those obscure signs and symptoms which puzzle us so often and which he ascribes to latent syphilis.

Starting on the assumption that there is a cycle in the life of the *Treponema pallidum*, he considers that many of

[1] *The Anaemias*. By Janet M. Vaughan, D.M., M.R.C.P. With Notes on Normal and Pathological Erythropoiesis by Hubert M. Turnbull, D.M., F.R.C.P. London: H. Milford, Oxford University Press. 1934. (Pp. 248. 12s. 6d. net.)

[2] *Essays on Chronic and Familial Syphilis*. By Griffith Evans, M.A., D.M., F.R.C.S. Bristol: J. Wright and Sons Ltd.; London: Simpkin Marshall Ltd. 1934. (Pp. 91; 13 figures. 7s. 6d. net.)

the so-called meta- and para-syphilitic manifestations are due to the "granules," and that latent syphilis is the cause of many chronic complaints, the diagnosis of which is frequently missed, and quotes as examples nervous dysphagia, basal congestion of the lungs, various forms of glossitis, and the "chronic abdomen." The evidence that these are attributable to syphilis is often weak, because the Wassermann reaction may be negative, the *Treponema pallidum* not demonstrable, and no pathognomonic lesions evident, but it is the therapeutic response which matters and which is of such importance to the general practitioner.

On the subject of the Wassermann reaction the author has some very wise remarks to make: this test has become a "master" and not a "servant"; many people think a negative reaction excludes syphilis; and "the diagnosis of syphilis is more often missed because a Wassermann reaction is negative than made because the reaction is positive." One way of approaching the problem of the diagnosis of latent syphilis is to observe the signs and symptoms in those who have it, and to argue from these its presence in those who may have it.

This little book is composed of matter that is largely of a highly controversial nature, and many of the opinions expressed are revolutionary; but it is refreshing to read the work of a man who has evidently given much thought and observation to his subject. Not all that is written must be taken for "gospel"—one might be led to believe that most of us are syphilized—for many of the arguments are rather unconvincing, while some of the deductions are made on what appear to be doubtful premisses. But at least we are given food for thought, and if a few bismuth injections or some mercury and potassium iodide will clear up the symptoms the practitioner will gain the gratitude of his patient, and if he fails he will have done no harm; we are not told much about failures. The author, like the Russian Socialists, may be ahead of his time, but perhaps he will help to lift some out of the "slough of despond."

ORAL SURGERY

Professor MEAD's *Oral Surgery*[3] has been compiled as the complement of his treatise, *Diesases of the Mouth*. That dealt with diagnosis; this deals with the actual surgery. The book is intended for everyday dentists and for students, and very wisely the author limits himself almost entirely to the minor surgery of the mouth. (Most pertinently he notes in his preface that, strictly, there is no such thing as *minor* surgery.)

At first sight, with its 1,000-odd pages and forty-seven chapters, it appears a formidable tome, and one wonders whether oral surgery, major and minor together, can possibly be stretched to such lengths. Apprehension on this score, however, soon vanishes; indeed, one often wishes the author had been more expansive, for the book is a record of wide experience by an acute observer. The first 300 pages are devoted to diagnosis, surgical anatomy, choice of anaesthetic, preoperative preparation, sterilization (in this chapter the author points out that, since spores have no means of attaching themselves to anything, scrubbing in running water may be relied on to remove them, while the actual vegetating organism is as easily killed as any other organism) inflammation, surgical bacteriology, and kindred subjects. All are treated in a clear, practical fashion. The remaining 700 pages deal with oral surgery proper and, with the exception perhaps of cleft-lip and cleft-palate and bone-grafting, with conditions any dentist in "general" practice may be called upon to treat. It is interesting to note the author's qualified approval of such operations as replantations and apicectomy, and his not quite convincing defence of alveolectomy. The chapter on removal of foreign bodies should be read by all who are likely to be called on to remove broken hypodermic needles from the jaws. That on fractures gives, we think, almost too hopeful a view of the fate of alveolar fragments carrying teeth. Necrosis receives but short notice, though its precursor, acute osteomyelitis, is fully dealt with, and rightly so, since a necrotic termination may sometimes be averted and often minimized. We agree with the author that there is no ground for incriminating extraction during the acute stage as a cause of subsequent necrosis. He seems to imply that *Staphylococcus pyogenes aureus* is the most frequent causative organism, but this is contrary to our experience.

The chapter on "Periodontal Disease" gives a reasoned summary of the various methods of surgical treatment of this disease, with perhaps too little appreciation of the *vis medicatrix naturae*. In a note on osteomalacia Professor Mead states that there may be "a softening or disintegration of tooth structure" in this disease: it would be of great interest to have this observation confirmed. The explanation of the aetiology of protrusion of the mandible offered on page 753 seems to us very open to question, as also is the claim that syphilis and tetanus are the chief causes of macroglossia (page 49). Under the heading "urinalysis" we should like to see a notice of acetone. The illustrations are numerous and to the point, though there are some (for example, on pages 493 and 956) which seem to need more explanation. But this is a big work, and contains a large amount of valuable information.

[3] *Oral Surgery*. By Sterling V. Mead, D.D.S., M.S., B.S. London: H. Kimpton. 1933. (Pp. 1087; 403 figures. 63s. net.)

POISONOUS PLANTS OF SOUTH AFRICA

The Toxicology of Plants in South Africa. Together with a Consideration of Poisonous Foodstuffs and Fungi,[4] by Dr. DOUW G. STEYN of the Onderstepoort Laboratories (Transvaal) gives a general review of stock poisoning and a comprehensive account of the researches on this subject that have been prosecuted for many years at the Veterinary Institute at Onderstepoort.

South Africa is afflicted with a wide variety of stock poisons, which constitute a serious problem in agriculture. One species alone is credited with the death of a million sheep in two years, while certain species of *Senecio* have made horse-breeding impossible in certain areas. Consequently a large amount of time and money has been devoted to the investigation of stock poisons. Fortunately these poisons are rarely the cause of human death or disease, but the extensive and elaborate toxicological investigations carried out at Onderstepoort have provided much information of general interest to pharmacology and toxicology. For example, the powerful actions of ergot (*Claviceps purpurea*) are familiar in human therapeutics, but it is interesting to learn that for practical purposes all fungus-infected foodstuffs must be considered poisonous until the contrary has been proved, since it would appear that a host of unknown active principles are produced by other fungi.

The bulk of the volume is occupied by the botanical description of toxic plants, together with an account of their effects. Some of these actions are of much general interest. Thus there are instances of delayed poisoning, such as stagger-weed, which gives rise to symptoms after a latent period of three to eight weeks. Some plants are noteworthy because they induce photo-sensitization. Another plant, when eaten by pregnant goats, causes alopecia in the kids, but when given directly to newborn

[4] *The Toxicology of Plants in South Africa. Together with a Consideration of Poisonous Foodstuffs and Fungi*. By Douw G. Steyn, B.Sc., Dr. Med. Vet. (Vienna), D.V.Sc. South Africa: Central News Agency Ltd.; London: Gordon and Gotch Ltd. 1934. (Pp. xii + 631; 135 figures. £2 7s. 6d.)

kids it does not produce poisoning. Perusal of the book reveals a most remarkable variety of toxic actions. Though he is particularly concerned with South African stock poisonings, the author has made a general review of the literature, and provides a bibliography of some twenty-eight pages. The publishers are to be congratulated on the get-up of the volume, and in particular on the excellence of the numerous illustrations.

ESSAYS ON SURGICAL TECHNIQUE

HENRY DELAGENIÈRE was born in Paris in 1858. He came from an old Protestant family, and was a direct descendant of Pierre de la Gelière, a friend of Ambroise Paré and Admiral de Coligny. After a brilliant career in Paris, where he was the house-surgeon of Lucas Championnière and of Terrier, he boldly left Paris and settled down at Mans. It was at the instigation of Terrier that he decided to develop in the French provinces a centre for the study of aseptic surgery, which was then in its infancy, and in that development Terrier himself showed very practical interest.

The volume, entitled *Cinquante Techniques Chirurgicales*,[5] records the personal observations of a surgeon of brilliant originality, who entered surgery at the commencement of a new technique, to become, ultimately, one of its greatest masters. It consists of a series of studies which range over the whole of surgery, from gastrectomy to the transplantation of the ureters, and from Caesarean section to suture of a fractured patella. In every case the problem is attacked from an original standpoint, and there is evident in every instance the vast experience of a master of his art. Almost every study is well illustrated, and the quality of the illustrations and the minute care with which technical details are elaborated show an appreciation of technique for its own sake which to-day is only too rare.

It is not to be expected that one should agree with all the methods described, but we venture to think that there is no surgeon so experienced that he will not learn something from a perusal of every single one of these studies. To the experienced surgeon who wishes to improve his technique we would most strongly recommend it as one of the most stimulating series of essays we have met for some time.

DINOSAURS AND THEIR DISEASES

The story of the dinosaurs, so far as it is known at present, has been excellently told by Dr. W. E. SWINTON,[6] who is a member of the geological staff of the British Museum. No doubt the interest which the public is now taking in the possible survival of Mesozoic monsters may have suggested the appearance of the work, but the purpose served is certainly not ephemeral. Dinosaurs began to appear in the world at the beginning of the Mesozoic (Secondary) period, some 180 million years ago, and after flourishing in all parts of the world, and assuming an infinity of forms, mysteriously vanished as mammalian forms began to appear at the end of the Mesozoic. The Dinosaur order, which sprang from that reptilian stem which gave rise to crocodiles on the one hand and birds on the other, came to an end after an existence of 120 millions of years. Dr. Swinton discusses very fully the possible causes of their extinction, favouring that which attributes the final catastrophe to over-specialization, with a complete loss of all power to undergo structural and physiological adaptation to changes in environment. The bigger dinosaurs had a body as large as that of an elephant, but their brains were no greater in size than that of a kitten. Possibly a fuller understanding of the part played by hormones in the evolution of new forms of life will explain certain aspects of the great dinosaur tragedy which are now obscure to us. Dr. Swinton devotes a chapter to the bone diseases of the dinosaurs, drawing on the descriptions of pathological specimens published by Dr. Roy Moodie, as well as upon his own observations.

[5] *Cinquante Techniques Chirurgicales de Henry Delagenière.* Collected and edited by Yves Delagenière. Paris: Masson et Cie. 1933. (Pp. 316; 63 figures. 50 fr.)

[6] *The Dinosaurs. A Short History of a Great Group of Extinct Reptiles.* By W. E. Swinton, Ph.D., F.R.S.E. London: Thomas Murby and Co. 1934. (Pp. 233; 20 figures, 25 plates. 15s. net.)

Notes on Books

Manometric Methods,[7] by Dr. MALCOLM DIXON, is a short laboratory handbook giving precise details of the methods devised for the measurement of cell respiration. Sir F. Gowland Hopkins, in a foreword, points out the significance of the results that have been attained from the development, by Warburg and others, of methods for measuring the respiration of micro-organisms and of small pieces of tissue. These delicate micro-methods have provided results of great importance in an exceptionally wide field, for they are used by biochemists, physiologists, bacteriologists, pathologists, and zoologists. The disadvantage of these methods is that the results are valueless unless scrupulous attention is paid to technical details. Dr. Dixon has a large experience in the use of micro-manometric methods, and his handbook provides an excellent guide for those wishing to master this difficult technique, and it will be of great value to research workers in many fields of experimental science.

Dr. PINEY, a recognized writer on haematology, has summarized in a clearly written "pocket-monograph" modern knowledge in *Blood Diseases in General Practice*.[8] The forms of anaemia, especially those in the young, have recently been so elaborated that the general practitioner will find this a useful guide not only in explaining the new nomenclature but also in employing suitable treatment. As an example of the up-to-date character of this small volume attention may be specially drawn to the account and treatment of agranulocytosis in the last chapter.

In his essay on *Social and Personal Factors in Chronic Alcoholism*,[9] which forms the third instalment of the series of psychiatric and neurological monographs emanating from the Neurological Clinic of the Charité Hospital of Berlin, Dr. KURT POHLISCH gives an interesting picture of the attitude towards the drink question at the present day among the various classes of society in Germany. In the first place, the change in the political situation has had a favourable effect on the decline of alcoholism, especially among the labouring classes, the students, and, to some degree, the Army. Other factors in the decline in alcoholism in Germany are the cinema and interest in athletics. With regard to the personal factors which are responsible for alcoholism Dr. Pohlisch brings forward statistics for the Charité Hospital, Berlin, for the period 1919–31, showing that 75 per cent. of chronic alcoholic subjects have some form of psychopathy, while most of the normal are of cyclothymic temperament.

The first edition of LANGERON'S *Précis de Microscopie* was published twenty years ago. It has gradually grown in size and in usefulness, and the fifth edition,[10] which has now appeared, contains much new matter. Labora-

[7] *Manometric Methods.* By M. Dixon, M.A., Ph.D., Sc.D. With a foreword by Sir F. G. Hopkins. London: Cambridge University Press. 1934. (Pp. 122. 5s. net.)

[8] *Blood Diseases in General Practice.* By A. Piney, M.D. M.R.C.P. Pocket-Monographs on Practical Medicine. London: John Bale, Sons and Danielsson, Ltd. 1934. (Pp. 92. 2s. 6d. net.)

[9] *Soziale und Personliche Bedingungen des Chronischen Alkoholismus.* By Dr. Kurt Pohlisch. Leipzig: Georg Thieme. 1933. (Pp. 52. RM.5.20.)

[10] *Précis de Microscopie.* Par M. Langeron. Fifth edition. Paris: Masson et Cie. 1934. (Pp. 1,205; 355 figures. Broché, 86 fr.; cartonné toile, 100 fr.)

tory workers in all parts of the world have come to regard Langeron's handbook of microscopical technique as an indispensable reference book, in which one is very likely to find the odd little bit of information which one has searched for through other books in vain.

We have received the fifth volume (1933) of the *Annals of the Clinic for Mental and Nervous Diseases of the Royal University of Palermo*,[11] an institution under the direction of Professor Colella Rosolino, which has recently acquired new and larger accommodation after an existence of some thirty years. The compilation includes forty-four articles relating to original work undertaken in the clinic, and dealing with such diverse topics as goitre-producing waters, alterations in the cerebro-spinal fluid, extrapyramidal syndromes, diathermy in neurological diseases, traumatic neurosis, the pathogenesis of multiple sclerosis, and serotherapy in infantile paralysis. These articles are bound together, and several are illustrated by plates and diagrams, the whole forming an admirable indication of the work in progress at a pioneer institution in the fields of neurology and psychiatry.

[11] Palermo: Industrie Riunite Editoriali Siciliane. 1933.

The eleventh issue of the *Proceedings of the University of Otago Medical School* is dated 1934, and has been edited by Professor D. W. CARMALT JONES. It contains a series of scientific publications by members of that University which have appeared in various periodicals, and an account of the British Medical Association in New Zealand, contributed to the *Canadian Medical Association Journal* in 1932. The volume opens with the George Adlington Syme Oration for 1933, which was delivered by Professor Gordon Bell, and was the second of the series. It deals mainly with the hospital problems and the education of the surgeon. Ten out of the dozen articles deal with topics of clinical interest, three relating to radium therapy.

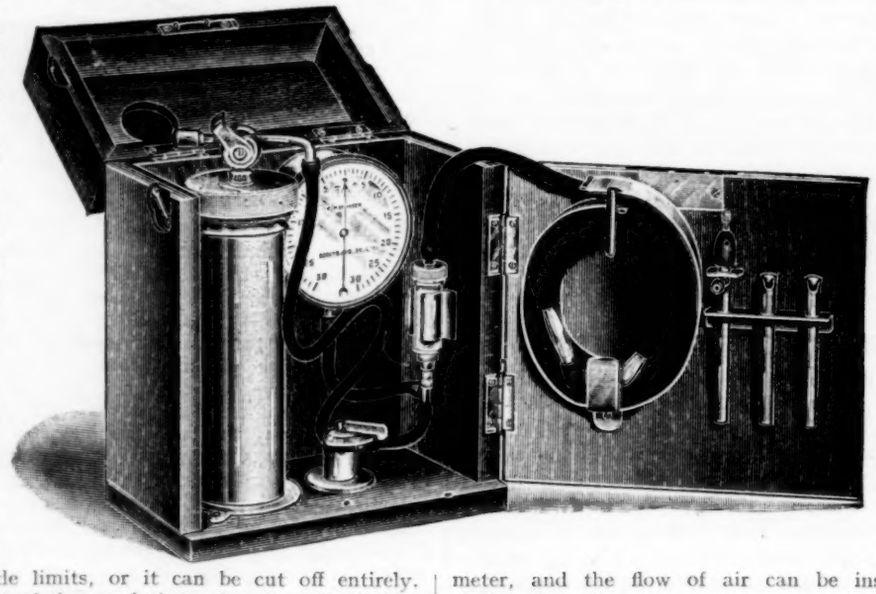
Preparations and Appliances

MINIATURE PNEUMOTHORAX APPARATUS

Dr. JAMES MAXWELL (London, W.1) writes:

This instrument has been constructed for me by the Genito-Urinary Manufacturing Company, and has been in routine use for the past six months, during which time it has given satisfactory results.

The apparatus consists of four essential parts—the pump, the regulating valve, the aneroid manometer, and the filter. These parts are contained in a cabinet 7 in. by 4 in. by 8 in., and the total weight is 6 lb. The pump has a capacity of 200 c.cm., and is made entirely of metal. The combined weight of the piston, piston-rod, and two-way cock is calculated to produce a gas pressure equal to a column of water of 35 cm. The piston-rod is hollow, and is fitted with a two-way cock of convenient shape to act as a handle by which the piston is pulled up. One end of this cock terminates in a screw cap for the purpose of holding a cotton-wool filter for the aspirated atmospheric air. The opposite end is bent downward, and is joined to the regulating valve by rubber tubing. By means of this valve the rate of flow of the air to the pleura can be controlled with great ease and accuracy within wide limits, or it can be cut off entirely. From the outlet port of the regulating valve the tube divides into two branches. One leads via the filter to the patient, and the other to an aneroid manometer. The quantity of air which has passed to the chest is indicated on the outside of the piston-rod by a double scale graduated by 20 c.cm. from 0 to 200 c.cm. The filter is a little more elaborate in design than is usual with existing apparatus, but the frequent and convenient change of the cotton-wool packing which is possible justifies the elaboration. It resembles the Record syringe, and consists of a glass tube with a metal cone at one end and a screw cap at the other. The ground metal cone fits into a counterpart, which is part of the "T" junction connecting the manometer and filter to the regulating valve. When the wool is to be changed the filter is removed from the clip which holds it to the wall of the cabinet, and is then disconnected from the "T" piece. The cap is then unscrewed and the wool changed. The whole process is carried out without disturbing the rubber tubing.



The manometer is specially constructed, and has been subjected to severe tests extending over two years in order to ascertain its constant accuracy. The scale is well spaced, and the pressures can be read easily; the instrument appears to be more sensitive than the water manometer. A suitable winder for the rubber tubing and a detachable rack for the needles are fixed inside the door of the cabinet. The most suitable lubricant for the piston has been found to be ordinary medicinal castor oil.

The advantages claimed for this instrument are that it is readily portable, there is little likelihood of accidental damage, it is always ready for use, and the difficulties inseparable from the use of liquid in the manometer are obviated. When used for a refill the instrument is placed upright, the cylinder is filled with atmospheric air, and the flow to the chest is regulated by the special valve, so that any desired pressure can be maintained; the pressure is constantly indicated by the manometer, and the flow of air can be instantly stopped by closing the valve.

For the induction of a pneumothorax, in which case it is necessary that the first part of the air should be drawn into the chest by the suction of the collapsing lung, the instrument is placed on its back so that the cylinder is horizontal. It has been found that a negative pressure of only 3 or 4 cm. of water is sufficient to move the piston, and so draw air into the chest. For the withdrawal of air from the chest the reverse process must be carried out, the air being drawn from the chest to the cylinder by suction. The filter must, of course, always be changed before the instrument is again employed for refills.

It is a pleasure to express my thanks to Mr. R. Schranz of the Genito-Urinary Company for the very great help which he has given me with the details of the design of the model, as well as the care and skill which he has devoted to its construction.

CLASSIFICATION OF MENTAL DISORDERS

BY

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In 1929 the Clinical Psychiatry Subcommittee[1] of the Royal Medico-Psychological Association began the revision of the existing official classification. This revision has been completed and accepted by the Royal Medico-Psychological Association as its official classification, and is here presented.

The scheme consists of two parts, intended to be used in conjunction with each other. Part I contains the actual classification and Part II the aetiological factors, or associated factors, as some may care to call them.

The revision of the aetiological factors has enabled the subcommittee to limit Part I as far as possible to a purely clinical classification—that is, one presenting clinical pictures or types of mental disorder with which all psychiatrists are familiar. Except in a very few well-defined instances, referred to later, terms with an aetiological connotation have been excluded from Part I. Further, an attempt has been made to make the classification sufficiently elastic to allow of future developments. For this reason the table consists of a limited number of broad headings, rather than an exhaustive inventory of syndromes and subgroups. Where, however, a patient is found to be suffering from a particular syndrome which is not adequately described under a group heading, it is stipulated that this is to be specified. For instance, a case of Korsakov's syndrome should be returned as "confusional state (Korsakov's syndrome)," and if the condition is deemed to be due to alcohol, the complete classification, expressed in symbols for statistical purposes, would be F (Korsakov's syndrome) 8 A *a*.

The headings under which such subtypes are likely to occur, or should be specified, have been indicated by an asterisk. Similarly, a number of the headings in Part II have been marked with an asterisk, and in these cases the precise aetiological factor is to be specified, when known. Thus a psychosis due to cerebral tumour should appear as I 10 (cerebral tumour); a case of depression following influenza and associated with a family history of manic-depressive psychosis would appear as E *a* ii . 8 B C & 1 *a* (manic-depressive).

CLASSIFICATION OF MENTAL DISORDERS—PART I

To be Used in Conjunction with Part II

(The Aetiological Factors)

A. Oligophrenia (amentia, mental deficiency).
- (*a*) Idiocy.
- (*b*) Imbecility.
- (*c*) Feeble-mindedness (moron).
- (*d*) Moral deficiency.

B. Neuroses and psychoneuroses.
- (*a*) Exhaustion states (including neurasthenia).
- (*b*) Anxiety states.
- (*c*) Compulsions, obsessions, and phobias.
- (*d*) Hysteria.
- *(*e*) Mixed and other forms.

C. Schizophrenic psychoses.
- (*a*) Dementia praecox.
  - (i) Simple. (ii) Hebephrenic. (iii) Katatonic. (iv) Paranoid.
- (*b*) Paraphrenia.
- *(*c*) Other forms.

D. Psychopathic constitution (including paranoia).

E. Affective psychoses.
- (*a*) Manic-depressive psychosis (cyclothymia).
  - (i) Elation. (ii) Depression. (iii) Stupor.
- (*b*) Involutional melancholia.

*F. Confusional states.

G. Epileptic psychoses.

H. General paralysis.

*I. Other psychoses associated with organic brain disease.

*J. Dementia.

*K. Undetermined types.

* Specify type when possible—for example, Korsakov's syndrome.

CLASSIFICATION OF MENTAL DISORDERS—PART II

1. Heredity.
   - *(*a*) Psychotic.
   - (*b*) Epileptic.
   - *(*c*) Neurotic.
   - (*d*) Alcoholic.
   - *(*e*) Various organic nervous diseases.
   - *(*f*) Endocrine disease.
   - (*g*) Tuberculous.
2. Deprivation of special sense.
   - (*a*) Sight.
   - (*b*) Hearing.
3. Critical periods.
   - (*a*) Puberty.
   - (*b*) Adolescence.
   - (*c*) Climacteric.
   - (*d*) Senility.
4. Child-bearing.
   - (*a*) Pregnancy.
   - (*b*) Puerperium (not septic).
   - (*c*) Lactation.
5. Mental factors.
   - (*a*) Previous attacks of mental disorder.
   - *(*b*) Sudden stress.
   - *(*c*) Maladjustments of—
     - (i) Social life.
     - (ii) Sex life.
6. Physiological disturbances.
   - (*a*) Malnutrition.
   - (*b*) Privation.
   - *(*c*) Exhaustion.
7. Trauma.
   - *(*a*) Injuries.
   - *(*b*) Operations.
   - (*c*) Sun- or heat-stroke.
   - (*d*) Electric shock.
8. Toxic factors.
   - A. Chemical.
     - (*a*) Alcohol.
     - *(*b*) Narcotic drugs.
     - *(*c*) Mineral poisons.
     - *(*d*) Other poisons.
   - B. Infective.
     - (*a*) Syphilis.
       - (i) Congenital.
       - (ii) Acquired.
     - (*b*) Puerperal fever.
     - (*c*) Influenza.
     - *(*d*) The specific fevers.
     - (*e*) Tuberculosis.
     - *(*f*) Focal sepsis.
     - *(*g*) Other infections.
   - *C. Metabolic.
- *9. Deficiency diseases (pellagra, beri-beri, etc.).
- *10. Diseases of the nervous system.
- 11. Diseases of other systems.
   - *(*a*) Haemopoietic system.
   - *(*b*) Cardiovascular system.
   - *(*c*) Respiratory system.
   - *(*d*) Gastro-intestinal system.
   - *(*e*) Genito-urinary system.
   - *(*f*) Endocrine system.
- 12. No factor ascertained.
- 13. No history obtained.

Additional Notes

The following definitions and explanatory notes have also been adopted for the guidance of those using the classification.

A. *Oligophrenia* (*Mental Deficiency*).—A condition of arrested or incomplete development of mind, whether arising from inherent causes or induced by disease or injury.

B. *Neuroses and Psychoneuroses.*—No differentiation is here made between the two conditions.

* To be specified.

(*a*) This should designate abnormal mental states characterized essentially by mental or motor fatigability and irritability.

(*b*) This includes the symptoms commonly exhibited by generalized fear.

(*c*) In this group should be included phobias, where the anxiety is attached to some definite object or situation.

(*d*) Is a faulty reaction to environment characterized by a variety of (1) motor symptoms, (2) sensory symptoms, (3) mental symptoms.

C. *Schizophrenic Psychoses.*—This syndrome includes cases which show remissions, and even recoveries, in addition to cases which show progressive deterioration.

(*a*) Dementia praecox.

(i) Simple: Cases characterized by defects of interest, gradual development of an apathetic state, often with peculiar behaviour, but without expression of delusions or hallucinations.

(ii) Hebephrenic: Cases showing prominently a tendency to silly laughter, grimacing, mannerisms, together with grotesque ideas and erratic behaviour.

(iii) Katatonic: Cases in which there is a prominence of negativistic reaction or peculiarity of conduct, with phases of stupor or excitement, sometimes characterized by impulsive or stereotyped behaviour, and usually hallucinations.

(iv) Paranoid: Cases characterized by unsystematized delusions, usually of persecution or grandeur, hallucinations in various fields, and a tendency to early dementia.

(*b*) Paraphrenia: Cases in which emotional and voli tional disorder is slight. Delusions and hallucinations generally grandiose and fantastic, but with little effect on ordinary conduct.

D. *Psychopathic Constitution.*—This group includes a large group of pathological personalities such as are found among criminals, tramps, sex perverts, drug addicts, mattoids, agitators, etc. The true prison psychoses should be included in this group. Paranoia: A delusional syndrome of insidious development. Hallucinations are absent, and there is no deterioration.

E. *Affective Psychoses.*—Involutional melancholia comprises the slowly developing depressions of middle life and later years characterized by worry, insomnia, uneasiness, and agitation. States of depression in arteriosclerosis should be excluded.

G. *Epileptic Psychoses.*—This group includes only what is known as essential epilepsy. Cases of organic brain disease, with seizures of any kind, are not to be included.

H. *General Paralysis.*—Cases of cerebral syphilis are excluded.

J. *Dementia.*—This group does not include the dementias where the original condition is known. The arteriosclerotic and presenile dementias are to be included in Group I.

Commentary

Some of the items dealt with above call for further comment.

A. Oligophrenia: The term "amentia" is open to very grave objections. In the first place, few of the cases included present an "absence of mind," so that it is an inaccurate term. The word was first introduced by Meynert as a name for a condition which we to-day call "confusional insanity." It is used in this sense in the Norwegian and Dutch classifications. The Italians use "amenza" as one of their subdivisions of "tossi-infectioni ed autointossicazioni," and divide it into "allucinatoria, apatica, lieve (pazzia sistematizzata acuta), gravissima (delirio acuto)." The clinics of Pilcz and Wagner-Jauregg in Vienna both used the word in the confusional sense. Shaw-Bolton used the word to correspond with "*de*mentia" (meaning "out of the mind"), his amentia being defined as "the mental condition of patients suffering from deficient neuronic development." The Greek word "oligophrenia," meaning "small mind," was adopted by Bleuler, and is also in the Dutch classification. This term is certainly not used in any other sense than for all classes of mental defectives. It is hoped that medical men will encourage the use of the word, and that the inaccurate and ambiguous "amentia" will be dropped. "Amentia" is retained in brackets simply as a guide in the meantime.

B. The terms "neuroses" and "psychoneuroses" were preferred to the expression "minor psychoses."

(*a*) The word "neurasthenia," for which many confess a liking, was rejected, as it was so very loosely used during the war as a dumping-ground for all sorts and conditions of mental disorders. Freud also uses the word in a restricted sense in connexion with masturbation. The expression "exhaustion states" was thought to convey a very definite meaning, and to indicate a fairly clear-cut clinical condition.

(*c*) Phobias have been separated from the anxiety states on the grounds of a fundamental difference between the vaguer, more indefinite and generalized fears of the latter and the definite attachment of fear to an object in the former.

(*b*) and (*d*) call for no special comment.

C. The word "schizophrenia" has come to occupy a permanent place in our vocabulary. The paraphrenic conditions, it was thought, ought to be separated from what we are used to calling dementia praecox. The time-honoured division into simple, hebephrenic, katatonic, and paranoid types was adhered to.

D. The paranoiac conditions which do not end in intellectual impairment should, it was thought, be sharply separated from the schizophrenic psychoses.

E. This section does not call for much comment. It was thought that the involutional states were more closely allied to manic-depressive insanity than to the schizophrenic conditions.

Section G is an unsatisfactory group, and will undoubtedly be subdivided as knowledge advances, but in the meantime it is retained to correspond to what is called "essential" epilepsy with psychosis. Obviously, however, an epileptic may remain sane, or may develop some other form of insanity, such as manic-depressive psychosis.

Section H (general paralysis) is a recognized clinical group, although purists may not agree with the diagnosis as sometimes made. Here again our knowledge is not sufficiently advanced to permit of any alteration.

I. The expression "the psychoses associated with organic brain disease" was intended to correspond with the present "insanity with gross brain lesion." It was felt that there was no need to separate off more than the syphilitic conditions.

K. The last division was left for conditions which could not be classified under any of the divisions A to J.

I cannot close these notes on the work of the subcommittee without expressing indebtedness to the late Dr. J. R. Lord. No one who has not had the pleasure of working with him can appreciate the extraordinary amount of work he did, or the help and encouragement he gave to the younger men. Although he did not live to see the completion of this classification, his was the moving spirit in the last two years' work.

REFERENCE

[1] This subcommittee at the time the classification was finally adopted consisted of the following members: Sir Hubert Bond (Emeritus Lecturer on Psychiatry, Middlesex Hospital), J. Brander, L. C. F. Chevens, K. K. Drury, W. Norwood East (Prison Commissioner), F. L. Golla, W. McCartan, Professor D. K. Henderson (Professor of Psychiatry, Edinburgh University), P. K. McCowan (Lecturer in Mental Diseases, Welsh National School of Medicine), D. McRae, W. F. Menzies, J. E. Nicole, W. D. Nicol (Lecturer on Psychiatry, London School of Medicine for Women), A. A. W. Petrie (Lecturer on Mental Diseases, Charing Cross Hospital and West London Post-Graduate College), M. Hamblin Smith, W. H. B. Stoddart, W. S. J. Shaw, B. H. Shaw, A. Walk, H. Yellowlees (Lecturer on Psychological Medicine, St. Thomas's Hospital), and the Honorary Secretary.

F. Bamatter (*Arch. f. Kinderheilk.*, March 31st, 1934) states that, whereas up to September, 1932, isolated cases of facial paralysis were rare, and actual bulbar paralysis was unknown, during the subsequent twelve months six sporadic cases of the bulbo-pontine form of infantile paralysis were observed in the University Children's Clinic at Zürich. There was, moreover, a simultaneous increase in sporadic cases of encephalitis and aseptic meningitis. In two very acute cases of bulbar paralysis the diagnosis was confirmed by inoculation of monkeys.

British Medical Journal

SATURDAY, JUNE 2nd, 1934

SOVIET MEDICINE AGAIN

It is very difficult for people in this country to keep an open mind about the course of events and of ideas in the Red Republics; without comprehensive first-hand knowledge we grope in the dark. Prejudice—if not propaganda—for or against the Soviet regime seems to run through almost every book and article on the subject. During August and part of September, 1932, Sir Arthur Newsholme and Dr. John Kingsbury, secretary of the Milbank Memorial Fund, travelled in Soviet Russia. Equipped with letters of introduction from Lord Passfield and Senator Borah they entered Soviet territory from Poland, and, moving by way of Moscow and Nijni Novgorod to the Volga, steamed down that river for four days. After visiting Tiflis they came to the Black Sea at Batum, took steamer from there to the Crimea, and returned by rail through the Ukraine to Moscow. In the course of their journey they saw much, and, though unacquainted with the Russian language, received much information. They have presented their impressions in a work entitled *Red Medicine*,[1] one half of which is mainly devoted to an exposition of Russian Communism, while the other half deals more specifically with the subject of the title.

In approaching the investigation of health conditions in Russia the authors take the view that the present-day framework of Russian society closely concerns the subject of their inquiry, just as it concerns every other human activity within the circuit of the seven Republics. They show how each Republic possesses in varying stages an electoral system, the chief utility of which is to divert the minds of the factory hands and peasants with engrossing but ineffective discussion. All power is in the grasp of the Communist party, working centrally through a dictatorship and locally through a secret police organization which tries, condemns, and executes at discretion. No person can join the party unless he renounces his religious faith. Owing to the intense overcrowding in houses, together with the facility of divorce and the ample provision of crèches for children, family ties are obsolescent. It is the aim to displace the family, and to substitute the factory as the focal point of communal life, providing thus, on a self-contained basis, for work, rest, and cultural development, as well as for hygiene and medical treatment at an attached health centre. The authors cite as an instance of an "admirably controlled" establishment of this kind the Selmashstroy factory at Rostov-on-Don, which is made up of eighteen works, each employing about a thousand people. Workers there are systematically examined by the works doctors, and according to their needs are relegated for treatment to a dispensary, polyclinic, specialist clinic, general or special hospital, venereal disease hospital, tuberculosis sanatorium, or night sanatorium, the last being a dormitory for those who, though able to do some work, stand in need of special care. The Unitary Dispensary at Rostov, the authors say, is an exemplary institution: it is described by them as admirably equipped in all special departments of medicine. At Kharkov they viewed the Third Labour Polyclinic, a "magnificent new building," with special departments for a wide range of clinical work, and "admirably equipped" for research as well. They thought that the hospital for railway employees at Tiflis, in the obstetric division of which there are special rooms for confinement, was "splendidly organized." They were astonished at the "vast provision," along the Black Sea coast and elsewhere, of rest-houses, convalescent homes, and sanatoria, once the palaces of Russian nobles.

The Soviet rulers, given time, could doubtless, like Trajan, build their world over, this task having been simplified at the outset by the adaptation to medical uses of many handsome existing structures no longer claimed by their owners. Their enterprise, their determination, and their vision for health in Russia were under notice in these columns last December, when we commented on a brochure by Dr. A. Roubakine of Moscow. In point of organization and equipment Sir Arthur Newsholme and Dr. Kingsbury confirm what Dr. Roubakine had already told us. They recount also as an example of Soviet efficiency that the entire population of the town of Kazan, numbering 179,000 persons, were vaccinated or revaccinated in June, 1932, following the occurrence of fifteen cases of small-pox in the previous winter. Buildings, equipment, and organization, however, are but the outward seeming of a medical service: its substance, content, and inspiration cannot be appraised by these externals, but only by the inherent quality of the medical work of which they are the setting. On this inherent quality, which is the true soul of medicine, the authors in dealing with Soviet Russia are not convincing. It may be that the genial flower of medicine blooms with difficulty in the stark and rigorous atmosphere of Communism. It may be that in the time at their disposal the travellers had not the opportunity to explore closely the effective content of medical practice in the various towns they visited.

But any uncertainty as to the medical standards would have been appreciably dispelled had the authors been able to supply pertinent information regarding the medical curriculum now or lately engaged in by Soviet students of medicine. The ranks of the profession in Russia as elsewhere must be presumed to be recruited from the medical schools, and the ideals of the schools should in consequence set the pace for the practising doctor. But here again the authors are reticent. Medical teaching is lightly touched on, and what little is said mainly relates to such incidentals as

[1] *Red Medicine: Socialized Health in Soviet Russia.* By Sir Arthur Newsholme, K.C.B., M.D., and John Adams Kingsbury, LL.D. London: William Heinemann (Medical Books) Ltd. 1934. (10s. 6d. net.)

the manner in which candidates are selected to begin study. The note that during his first year the student "assists in minor medical and surgical work, including cleaning up after the work is completed" is not reassuring. Dr. Roubakine, above referred to, is more communicative. Medicine, he says, is tripartite in Russia. It is studied under three specialisms. The courses last from three and a half to four years, with a further year of probationer service, and besides medicine include social science, economics, and the Marxian philosophy, military training, and the acquisition of materialistic views. Whatever the medical content of the curriculum the student is apparently not at liberty to devote his undivided attention to it. The conclusion seems warranted that the young Russian doctor at the present time is less well trained in medicine than his contemporaries in Western Europe, and that the medical services of the Union must in consequence be affected prejudicially. The Soviet Government, which controls all medical teaching, will no doubt effect reform in this field also, but the task will not prove quite so easy as the equipment of buildings and the organization of services.

The authors claim that in making their investigations they had no previous bias, "except some measure of scepticism as to the possibility of the Western world deriving useful lessons from Eurasia." Some examples of their lavish praise of Soviet undertakings have been quoted above. In one passage elsewhere they strongly deprecate the class hatred systematically instilled into the mind of the young Russian; but in sundry other matters where Soviet conduct has outraged Western feeling they assume an air of detachment which will surprise most English readers. Whether a polity under which there is nothing for a man to worship but the material things his own hands have made, does or does not carry within it some inevitable seeds of decay, the Soviet Government in the meantime has achieved much in health organization, and may be expected to achieve more, even to the extent of establishing throughout a great part of its territory medical services which, though ranking below Western standards, will be competently mass-productive of physical efficiency. In this way it will further the plan of the despotic Communist Party, which is to provide for labour and defence—the two key words of Communist teaching—from the kindergartens onwards.

ALLERGY AND IMMUNITY IN TUBERCULOSIS

Discussion on the relative parts played by allergy and immunity in the defence mechanism of the host against tuberculosis is reminiscent of the old controversy which raged between the protagonists of the humoral and those of the cellular theory of immunity. The present conception of immunity to infection rests on both a cellular and a humoral basis. The preliminary sensitization, mechanical clumping, and sometimes lysis of the bacteria appear to be dependent on antibodies which are either free in the circulation or are concentrated on the surface of the tissue cells, while the ingestion of the bacteria, their removal from the circulation, and their subsequent disintegration are accomplished mainly by phagocytic cells of various types. Generally speaking, the presence of a high content of circulating antibody is indicative of a considerable degree of immunity, while when the antibodies are present in just sufficient quantity to satisfy the demands of the cells the immunity is of a lower grade. There is evidence to suggest that the meeting of antigen and antibody on the surface of the cells is often accompanied by a severe reaction of anaphylactic type, while when the union occurs in the circulation this type of reaction is forestalled.

There seems to be no valid reason for excluding resistance to tuberculosis from this general picture. The evidence so far accumulated seems to be compatible with the view that allergy represents a stage in the development of immunity when the antibodies are concentrated mainly on the surface of the cells, whereas so-called immunity is a stage further on, when there is some free antibody in the circulation, and the local disturbances caused by the meeting of antigen and antibody in the tissues are therefore less severe. This conception, however, does not seem to be in the minds of many of those who are working experimentally on tuberculosis. Largely owing to the views put forward by Rich, attempts are now being made to dissociate allergy from immunity. One of the methods of doing this is described by H. Rothschild, J. S. Friedenwald, and C. Bernstein[1] in a study of tuberculous infection in guinea-pigs, and consists in desensitizing the allergic animals with increasing and ultimately massive doses of tuberculin. The general procedure of these workers was to inoculate a number of guinea-pigs with the R_1 strain of tubercle bacillus, which set up a mild and non-progressive type of infection; to leave them till skin hypersensitiveness had become well established; to divide them then into two groups; and to desensitize one group with tuberculin, leaving the other allergic. Both groups were subsequently inoculated, along with a control group of non-tuberculous animals, with virulent tubercle bacilli, and their behaviour studied. This experiment, though performed on a fairly large scale, was unsatisfactory in many respects, mainly because the mortality from intercurrent disease was so high that insufficient animals survived to allow really comparable figures to be obtained. It was found, however, that by continued inoculation of tuberculin after infection, daily doses of 2,000 mg. being given subcutaneously, the animals could be kept in a desensitized condition, and evidence was obtained that these desensitized animals were just as resistant as the non-desensitized group. The argument is therefore that immunity is independent of allergy. This method of experiment is open to serious criticism. It is surely unjustifiable to assume that animals whose

[1] *Bull. Johns Hopkins Hosp.*, 1934, liv, 232.

antibodies are being continuously neutralized with massive doses of antigen are no longer allergic. It would be almost as justifiable to assume that an anaesthetized man who was being continuously given whiffs of chloroform was dead because he showed no signs of resuming activity. If it is to be shown that allergy and immunity are entirely dissociated some better type of experiment must be devised.

More illuminating are the results described by H. Sewall, E. de Savitsch, and C. P. Butler,[1] who, by superinfecting guinea-pigs at varying times after the first infection, obtained evidence that immunity was more or less inversely proportional to the degree of skin hypersensitiveness. Animals superinfected after seventy-four days were apparently more resistant than those superinfected after fifty-three days, the former group of animals having a rather lower degree of allergy than the latter. These results suggest that allergy gradually passes into immunity. If this conception is true, it explains why allergy may be present without any marked increase in resistance to infection, and why immunity may be present without any allergic manifestations.

A SYMPOSIUM ON GASTRIC BLEEDING

Two years ago E. Meulengracht[2] started feeding up instead of starving his patients with haematemesis and melaena, after noticing that some died exhausted after the old-fashioned treatment had been carried through most conscientiously, and that persistent haemorrhage was apt to cease as soon as food was given. These and other observations made him ask why a patient suffering from shock after haemorrhage should precisely at this stage be robbed of calories and vitamins whose withdrawal could hardly be expected to promote the processes of healing. Between July, 1931, and August, 1933, he let the 119 patients treated for haematemesis and melaena at his hospital eat as much as they liked. What he calls a puré diet was supplemented by a teaspoonful of an alkaline powder with hyoscyamus, and 7 grains of iron lactate, thrice a day. Tea and bread-and-butter were given at 6 a.m., oatmeal porridge with milk and bread-and-butter at 9 a.m., and at 1 o'clock a dinner which might include several items of an imposingly long and varied menu on which meat, fish, eggs, vegetables, and fruit were presented. Cocoa was served at 3 p.m., and sandwiches with tea at 6 p.m. Of the five deaths among these 119 cases, two were associated with cancer of the stomach and one with Banti's disease. Only two deaths were traceable to the haemorrhage itself, and in one of these cases the 50-year-old patient was already moribund when admitted to hospital. The surviving 114 patients recovered with a surprising facility, and the medical and nursing staff found their patients much easier to handle. Some of them had been treated before for the same condition on the old system of starvation or semi-starvation, and were most appreciative in their comparisons. Systematic examinations of the faeces for blood showed that on the average the benzidine reaction became negative in about ten days. In 1928, 1929, and 1930 Meulengracht treated seventy-five cases on the old-fashioned lines, and twelve of them ended fatally. Among the sixty-three survivors, the average time taken for the benzidine reaction to become negative was about thirteen days. T. E. Hess Thaysen[1] argues that Meulengracht's dietary must entail the irrigation of the bleeding ulcer with acid gastric juice and food, some of which is acid. To arrest haemorrhage from an ulcer, he says, it is desirable: (1) to reduce the pressure in the arteries in the area involved, and (2) to make the stomach contract. The first objective is attained by absolute rest; the second by starvation, which reduces the output of acid and the circulation of the blood. Hess Thaysen refuses to be cajoled into the abandonment of treatment by starvation, observing that many a new remedy achieves wonderful successes at the outset. He also suggests that one of Meulengracht's patients, who died of perforation of an ulcer after six days' treatment, might have escaped perforation had he been starved. Oline Christensen[2] criticizes Hess Thaysen's criticisms and refers to gastrographic investigations of the human stomach which she made in 1931. They showed that an empty or nearly empty stomach is alternately at rest and powerfully contracted, whereas a fairly well filled stomach is all the time relatively at rest, the continuous contraction waves being much weaker than those of the starving, empty stomach. Her gastographic records of cases of juxtapyloric ulcers and pyloric gastritis have convinced her that it is a mistake to assume that a gastric ulcer will be given rest and made to heal by starving the patient. In her opinion, the maximum of rest for the stomach can be assured by giving the patient eggs in milk in quantities and at intervals which will prevent hunger pains. While she admits that there is something to be said, from the point of view of publicity, for the doctrine which encourages a patient to wipe the blood off his mouth and forthwith eat a beef steak, a safer course for the time being would be to give eggs in milk in quantities and at intervals which would prevent pain, and, from the third or fourth day, also to give fresh orange juice in sugared water. A. Faber[3] characterizes Meulengracht's doctrine as the outcome of the craving, from which every new generation suffers, to upset the teachings of the past, preferably by paradoxes.

[1] *Amer. Rev. Tuberculosis*, 1934, xxix, 373.
[2] *Ugeskrift for Laeger*, November 23rd, 1933, p. 1257.

[1] *Ugeskrift for Laeger*, December 21st, 1933, p. 1366.
[2] Ibid., January 4th, 1934, p. 14.
[3] Ibid., January 4th, 1934, p. 13.

NUTRITIVE VALUE OF PASTEURIZED MILK

At a time when there is a growing opinion among members of the medical profession that milk cannot be recommended for human consumption in the raw state it may be apposite to ask whether children brought up on heated milk do, in fact, thrive as well as those brought up on raw milk. Two large-scale investigations have been made to answer this question. The first was carried out in Lanarkshire in 1930. For four months in certain schools 5,000 children of 5 to 12 years of age were given three-quarters of a pint of raw Grade A (T.T.) milk a day, and 5,000 children in the same schools were selected to act as a control series. In a second set of schools 5,000 children were given three-quarters of a pint of the same milk pasteurized, and another 5,000 children in the same schools were selected to act as controls. The children were measured and

weighed at the beginning and end of the experiment. It was found that the children receiving extra milk grew more rapidly than the controls, and that the effects of raw and of pasteurized milk were, so far as it was possible to judge, equal. Owing to criticism from certain quarters of the technical analysis of the results, all the figures were submitted to University College, London, for re-examination by an independent authority. Dr. Ethel Elderton,[1] who conducted this fresh statistical inquiry, has now come to substantially the same conclusions as those originally reached. "There is no evidence that raw milk has an advantage over pasteurized or pasteurized over raw in increasing growth when the two are directly compared on this selected material. Thus the question of the value of pasteurization turns practically on the elimination of possible sources of disease, or on determining whether cases of certain diseases are less frequent when pasteurized rather than raw milk is taken." The second investigation was undertaken in the United States of America, and was reported in 1932.[2] It consisted of an extensive field study of the height and weight, at ages from 10 months to 6 years, of two groups of children, one of which had consumed raw milk and the other heated milk. Altogether over 3,000 children were studied. Since the number of those who had received no heated milk at all was practically negligible, it was decided to place in the raw milk group the children who had received raw milk for more than half their lives, and in the heated milk group those who had received heated milk for more than half their lives. The results showed that the average weight of the raw milk group was 36 lb., as compared with a figure of 36.3 lb. for the children who had received heated milk. The average height in the raw milk group was 37.4 inches, and in the heated milk group 37.5. No evidence was therefore obtained to suggest that the growth-promoting capacity of heated milk, plus the supplementary diet received by the average American child, was measurably less than that of raw milk, plus the usual supplementary diet. It is of interest, however, in view of Dr. Elderton's conclusion, to notice that the children receiving mainly raw milk had apparently suffered more from diphtheria, scarlet fever, intestinal disturbances, and rickets than the children who had received heated milk only.

AMOEBIC DYSENTERY

Those who read the article on amoebic dysentery in the *Journal* of April 14th (p. 672) dealing with the recent occurrence of some cases in Chicago will welcome a note[3] by the distinguished director of the United States Public Health Service, Dr. G. W. McCoy, who thinks that the facts at present at the disposal of health officers do not afford sufficient basis for the drastic measures which are being put into execution. He lends his support to the orthodox point of view, and doubts if the Chicago cases have led to much spread of the infection elsewhere: he is also of the opinion that there is no clear evidence that carriers, even among food-handlers, are an important source of infection, and that there is no need for the isolation of carriers or of contacts of either clinical cases or carriers. Perhaps, all things considered, it would not be a disadvantage from the administrative point of view to revert to the state of affairs that existed prior to the Chicago epidemic. Dr. McCoy further calls the attention of physicians to the importance of recognizing cases of dysentery and to the general necessity for personal cleanliness among food-handlers, particularly in the washing of hands after defaecation; he also warns against the contamination of drinking supplies, and announces that research is being carried on by the Public Health Service into obscure features of amoebic dysentery. That a high incidence of *Entamoeba histolytica* infections may exist under certain conditions without any definite intestinal disturbance, let alone amoebic dysentery, is well illustrated by the figures which have been given[1] for a group of Indian children in Wyoming. It was found that 26.5 per cent. were carriers of this organism. Again, in another paper in the same journal[2] three cases of acute intestinal disorder which occurred in one family after visiting Chicago in August, 1933, are described. Dysentery bacilli were found in all, as well as *E. histolytica*, the latter only sixty days after the onset of the acute symptoms, which were relieved by treatment with vaccine prepared from the isolated dysentery bacillus. It is evident, therefore, that much has yet to be learned concerning the many obscure features of amoebic dysentery, as the director of the United States Public Health Service has so clearly indicated.

THE "ONE-PIPE" IN ST. MARYLEBONE

Two papers on the "one-pipe" system of drainage, one of them by Dr. Charles Porter, medical officer of health for St. Marylebone, and the other by Mr. W. H. Draper, sanitary inspector for that borough, which formed part of a symposium in the autumn series of Chadwick Lectures in 1933, have been reprinted in pamphlet form from the pages of *Public Health*. We noticed Dr. Porter's contribution at the time it was made,[3] and the action of the London County Council in amending its by-laws to permit of the installation, under conditions, of the one-pipe system, was the subject of a more recent note.[4] There is no need to describe again, therefore, the one-pipe system and its economical advantages; it is the standard system, according to Dr. Porter, in many other countries, but has found somewhat tardy application in Great Britain. He emphasizes the part which his own borough has played in bringing about sanitary reform. Limitations of space in St. Marylebone, and the nature and construction of the modern buildings which have arisen there, have seemed to necessitate departures from by-laws relating to sanitation. A considerable proportion of the residents have always desired sanitary arrangements in advance of anything provided in the regulations, and a progressive borough council has been ready to move with the times—or in advance of the times so far as the rest of London is concerned. St. Marylebone, by the way, is the authority which, following the American plan, places the division of sanitation in the public health department under the charge of the medical officer of health, who often finds himself called upon to submit reports upon applications

[1] Elderton, Ethel M.: *Annals of Eugenics*, 1933, v, 226.
[2] Frank, L. C., *et al.*: Public Health Reports, Washington, 1932, xlvii, 1951.
[3] *Public Health Reports*, 1934, xlix, 359.

[1] *Journ. Amer. Med. Assoc.*, March 24th, 1934, p. 913.
[2] Ibid., March 24th, 1934, p. 916.
[3] *British Medical Journal*, December 2nd, 1933, p. 1043.
[4] Ibid., April 7th, 1934, p. 632.

for permission to modify by-law requirements. At Broadcasting House, which is in St. Marylebone, the liberty to have completely internal closets and soil-pipes had been anticipated, with the approval of the borough council, some years before the L.C.C. made provision for such an arrangement. It is in St. Marylebone, too, that a new hotel with a phenomenal number of bedrooms has lately been erected, and here it was desired that each bedroom should be provided with a separate completely fitted bathroom. When the scheme was first mooted the picture which came to mind was of a building hidden by a forest of pipes, but a scheme along modern lines was prepared and permission granted by the borough council. Dr. Porter says that St. Marylebone seemed suddenly to erupt buildings suitable for the one-pipe system and builders anxious to introduce it. Wherever there appeared to be good grounds for acceding to requests for special treatment the borough council permitted departure from the by-laws; but he does not think that, even with the amendments and additions which the L.C.C. has now made, reform in this direction is complete. He foresees yet greater simplification and progress, and without danger to public health. In Germany a one-pipe system was adopted some time ago, and in Berlin, in buildings of all classes, but particularly in blocks of flats, soil-pipes, which act as the sole ventilators of the system, serve as the main waste-pipes as well, and receive the discharges from baths, sinks, and lavatory basins; no detrimental effect upon the Berlin population has so far been evident. Dr. Porter is not embarrassed by too great a respect for by-laws, especially in matters relating to drainage. Some day, he hopes, the possibility will occur to all and sundry, following at a distance the confident strides of St. Marylebone, of so dealing with by-laws that they become less obstructive of progress in sanitary matters. Mr. W. H. Draper's contribution is also interesting as dealing with the more technical aspects of one-pipe construction.

LINKS WITH LISTER

Mr. C. J. S. Thompson has written a small and handy volume entitled *Lord Lister*,[1] which conveys to the reader in small space an adequate idea of the life and work of its eponymous hero. As the technical parts of the subject are treated in popular language there should be no difficulty in the way of its being understood. At the same time, the reader is put in possession of all that it is necessary to know in order to appreciate the greatness of the man and the world-wide and undying importance of his achievements. When the book comes to be reprinted, as probably it soon will be, in a new edition, no doubt the names of von Graefe, Timothy Holmes, William MacCormac, and Sir William (not Edward) Jenner will be correctly quoted. The comparatively slow acceptance of the Listerian gospel is well illustrated in some manuscript notes of lectures to nurses, which Dr. G. Francis Smith, late of Carlisle and now of Folkestone, has been so obliging as to show us. Lister's first experience with compound fracture occurred in 1865, and in the succeeding twenty years he published several notable papers on the subject of antiseptics. Nevertheless in 1885, when Dr. Francis Smith delivered his lectures, he was still not quite convinced by antiseptic doctrine, and laid more stress on "cleanliness" than on the exclusion of pathogenic organisms. Yet Koch's discovery of the *Bacillus tuberculosis* was already three years old, and the principles of bacteriology well established. Dr. Francis Smith rightly instructed his nurses that the greatest principle of all is cleanliness, and he pointed out the danger of contamination of wounds from the carelessness of assistants, nurses, and others who had not grasped the principles of the antiseptic or aseptic methods. Many of the senior surgeons were too old to learn, and it was not till younger men came into the control of wards and theatres that Listerism got a fair chance.

[1] *Lord Lister: The Discoverer of Antiseptic Surgery.* By C. J. S. Thompson, M.B.E. London: J. Bale, Sons and Danielsson, Ltd. 1934. (Pp. 99. 5s. net.)

WELFARE OF THE BLIND

In 1927 the Ministry of Health published a most useful handbook on the welfare of the blind in England and Wales[1]: this has now been issued in revised form. The aim of the work is not to stimulate interest on behalf of the blind, for that is assumed to exist; it is to supply those interested with the facts relating to blindness and the assistance of the blind, so that they may be able to take an intelligent part in any work they do for the blind. The handbook is a necessity to every ophthalmic surgeon, medical officer of health, and school medical officer, and it would be of value to many social workers. Since 1927 there have been many changes, chiefly due to the Local Government Act of 1929 and the consequent altered relation of the statutory authorities to the blind societies. The latter now have no direct access to the Ministry, but come under the local authorities. This change has considerably modified methods whereby the blind may be helped, so that a new handbook was greatly needed. Attention is drawn to the statutory definition of blindness and the explanation thereof suggested for the help of those who have to use that measure. It is truly stated that certification of blindness is often a difficult matter, and consequently the Minister has indicated that it was

> "desirable to make arrangements for securing that before a person's name is added to the register he is examined by a medical practitioner with *special experience in ophthalmology*. It appears to the Minister that the necessary expenditure for this would be clearly justified by the consequent avoidance of registration of persons who are not blind within the meaning of the Blind Persons Act, and the saving of expenditure which might otherwise have been incurred in respect of such persons."

The latest returns of the numbers of blind persons on the registers on March 31st, 1932, were 62,079, and on the same date in 1929 52,727. The increase is believed to be due mainly to the improvement of the machinery for registration. But it may also to some extent be the result of the substantial benefits now available to the blind, and to the consequent inducement for persons (some of whom may not be blind within the meaning of the Blind Persons Act) who were not previously registered to apply for and obtain registration as blind persons. This consideration reinforces what has been said on the great importance of the proper certification of blindness. Over 77.3 per cent. of the total number

[1] *Handbook on the Welfare of the Blind in England and Wales.* Revised edition. London: H.M. Stationery Office. 1934. (1s. net.)

of the blind are classed as unemployable. This is explained when the age factor is taken into consideration, for seven out of every ten are over 50 years of age. There has been a material diminution of the number of blind children owing to the prevention of ophthalmia neonatorum ; consequently the increase in the proportion of blindness in the higher ages of life, when the possibility of work is small, becomes evident. The unemployed blind fall into two categories—those who are capable of being employed and those who are not. It is important to distinguish between them, for there is provision in all schemes for aid in training anyone who is capable of being trained and usefully employed. Nearly 87 per cent. of the blind between 50 and 70 are in receipt of old age pensions. Formerly institutions for the blind were a necessity for many ; now, when incomes are made up to one pound a week or more, it becomes possible and better for them to live at home or with friends. It is more desirable for the blind to be members of a sighted household if they are properly cared for. The new handbook deals with the varied needs of the blind, and indicates what means there are for putting them into as satisfactory a position as their capabilities will allow. The section on the prevention of blindness should be read by all employers of labour, for loss of sight due to accident is a material factor in adding to the tale of the blind.

THE DANGERS OF CARBON BISULPHIDE

Carbon bisulphide is used in various industries, such as the manufacture of artificial silk and rubber goods, and it is very dangerous because of its poisonous and volatile nature. The Factory Department of the Home Office has therefore issued a memorandum[1] explaining the precautions which should be taken in order to minimize the risks of poisoning, fire, and explosion. It points out that the vapour of carbon bisulphide is toxic even in low concentrations, and has a profound effect on the nervous system. A concentration of about 600 parts per million produces serious disturbance if inhaled for an hour, whilst double this concentration is dangerous in thirty minutes. The usual effects in workers exposed to the vapour are nausea, indigestion, headache, and giddiness, sometimes accompanied by emotional disturbances of a hysterical character. With continued exposure the mental disturbance increases, and is accompanied by impairment of memory and mental depression. There may be muscular weakness due to toxic neuritis, especially of the facial muscles and flexor muscles of the forearms, and ultimately the affected person may become almost completely paralysed. Slow recovery usually takes place after removal from the toxic vapour, but in advanced cases permanent effects may remain. Cases of industrial carbon bisulphide poisoning have to be notified to the Factory Department, and since 1925 they have numbered only eighteen in all, but they might easily increase unless the suggested precautions are taken. These consist of efficient exhaust ventilation, and periodical transference of the exposed workers to other processes where carbon bisulphide is not employed.

[1] Form 836, Factory Department, Home Office. Memorandum on Precautions against Dangers of Poisoning, Fire, and Explosion in Connexion with the Use of Carbon Bisulphide in Artificial Silk, India Rubber, and other Works. London: H.M. Stationery Office. 1934. (3d. net.)

Nova et Vetera

A HISTORY OF NURSING

Pride in one's art or craft must be connected with the consciousness that it is good work, but there may be added to this a pride that one is doing work that has a long and honourable history behind it. For the nurse there is this double pride. In addition, she may be proud of the great advance made in nursing within known memory. *A General History of Nursing*,[1] by Miss Seymer, might well be a treasured possession of every nurse, for therein is told, and told most effectively, the history and recent growth of nursing services.

Ancient India has the honour of possessing the earliest certain record of a nursing service. In the *Sushruta-Samhita*, dating from about the fourth century B.C., there is evidence that each village had its doctors and hospitals. There is this remarkable passage:

> "That person alone is fit to nurse or to attend the bedside of a patient who is cool-headed and pleasant in demeanour, does not speak ill of anybody, is strong and attentive to the requirements of the sick, and strictly and indefatigably follows the instructions of the physician."

It has never been satisfactorily explained how this great Hindu civilization met such swift and complete decay; conquest by less civilized peoples may be held accountable. Much earlier records than this suggest that nursing was done, probably by members of the household. The Egyptians in the temples of Imhotep practised incubation ; this implies attendants. The public health laws of the Jews were strict on the hygiene of women after childbirth, and on the diagnosis, quarantine, and cleansing of leprosy. Houses for strangers were provided, but whether they were inns or hospitals is a moot point. There is evidence that in early Greece there was a practice of medicine other than by the priesthood. Homer describes the doctor as "a man worth many others," and the fair-haired Agamede knew as many drugs as the wide earth nourishes. We are bound to assume, however, from the absence of all records to the contrary, that in Hellenic and Hellenistic times real nursing by efficient women was practically unknown. Rome developed a system of military hospitals ; Vegetius, late fourth century A.D., gives an account of the organization of these soldiers' hospitals, and speaks of the prefect of the camp as being in charge of the "sick who are in tents and the doctors by whom they are healed." But there does not appear to have been any public hospital where the poor were treated until Christian times, for St. Jerome says that Fabiola built the first hospital in Rome. Early records describe women "deaconesses," who seem to have served as nurses. Certainly they are referred to in the third century as "assisting the women visited with sickness."

EARLY NURSING ORDERS

The first Christian hospitals combined hostel, infirmary, and orphanage, for the sick, the old, and the destitute were gathered there. With the growth of, and gradual control by, the monastic orders these infirmaries became ecclesiastical rather than medical ; care rather than cure became their aim. There were nursing orders, such as the Knight Hospitallers, the Teutonic Knights, and the Lazarists ; in the second of these there were lay sisters, who were admitted "because services to cattle and to sick persons in hospital are better performed by the female sex."' With the Reformation such hospitals as survived came under the control of laymen—St. Bartholomew's, St. Thomas's, Bridewell, and others in England, and the Hôtel-Dieu in Paris. Early in the seventeenth century St. Vincent de Paul founded that famous nursing order known as the Sisters of Charity. The sisters had on no account to be called "religious" ; in this St. Vincent ran counter to all the traditions of the Roman Church. He said:

[1] *A General History of Nursing*. By Lucy Ridgely Seymer, M.A.Oxon., S.R.N. London: Faber and Faber, Ltd (12s. 6d. net.)

"The Sisters of Charity shall have for monastery the houses of the sick, for chapel the parish church, for cell a hired room, for cloisters obedience, for grille the fear of God, and for veil holy modesty."

From the end of the seventeenth century to the middle of the nineteenth little or no progress was made in the art of nursing; in some places there was actual deterioration. In England, at the time of the Great Plague, the so-called nurses were "dirty, ugly, unwholesome hags." Even in European countries the religious sisters, despite their discipline and devotion, were, as science advanced, increasingly hampered by antiquated routine.

Although there was much hospital building in England in the eighteenth century the nursing was mean. Sometimes the qualification of the nurse chosen was merely that she had been a patient. In America the "nurses" were "ten-day" women detailed from the penitentiary. A faint desire to remedy bad conditions by better pay appears in the records of the Middlesex Hospital, London, in 1838:

"The committee are, however, of opinion that a hope may be entertained by raising the wages . . . of procuring and retaining the better description of nurses—women who will take more interest in their duties, their character, and appearance."

One of the most important factors in the regeneration of nursing was the Deaconess Institution at Kaiserswerth, set up by Pastor Theodor Fliedner. In 1836 he revived the ancient order of church deaconesses. Elizabeth Fry paid a visit to Kaiserswerth in 1840, and in recording the visit her niece wrote:

"Pastor Fliedner . . . has also instituted Protestant Sisters of Charity whom he terms Deaconesses. They are all dressed alike in blue print gowns and neat white caps. They wait entirely on the patients, go out to visit the poor, and are sent to any parts of the Kingdom."

NINETEENTH CENTURY REFORMS

About this time the need for nursing reform attracted the attention of far-sighted women in England, Ireland, and Germany, and several "sisterhoods," both lay and clerical, were founded. Some of these took over the nursing services of large London hospitals. Impetus was given to the movement by the vivid pen of Charles Dickens, whose portraits of "Mrs. Sairey Gamp" and "Mrs. Betsy Prig" depict the depths to which the ordinary professional nurse had sunk. Of all these nineteenth century attempts to improve nursing the most original is the foundation, one year before the Nightingale School, of "La Source," at Lausanne, by the Comtesse Agénor de Gasparin. She founded this institution as a protest against the "motherhouse" system, which she felt to be definitely wrong. Her opposition to it was based on two main principles: first, that the personal liberty of each individual was of paramount importance; and, secondly, that women should be salaried, and not bound by vows. She called it a training school because she thought piety was not enough, and students should be systematically and thoroughly trained by doctors.

The work of Florence Nightingale is too well known to need elaboration. It is certain that she early had a personal bent for nursing, and this was stimulated by visits to hospitals abroad, and particularly by a visit to Kaiserswerth. Her first undertaking was the superintendence of the "Establishment for Gentlewomen during Illness" at 1, Upper Harley Street. She was there a full year, broken by holidays and a short term of service at the Middlesex Hospital during a cholera epidemic. The Crimean war gave Florence Nightingale her opportunity. She and Sidney Herbert, then Secretary at War, encouraged by an awakened spirit at home, as evidenced by "*The Times* Fund," rode roughshod over military red tape. To have *women* nurses with the British Army! It was immodest, unthinkable, revolutionary! And yet this was the epoch-making idea that Sidney Herbert not only suggested, but carried into effect. If Florence Nightingale was the foundress of modern nursing, Sidney Herbert must rank as its patron.

THE NEED OF TRAINING

In the general field what differentiated Florence Nightingale's ideas from the opinions of her contemporaries was her insistence on the necessity of *training* for work. She said.

"Three-quarters of the whole mischief in women's lives arises from their excepting themselves from the rules of training considered needful for men." And again: "An uneducated man who practises physic is justly called a quack, perhaps an impostor. Why are not uneducated nurses called quacks and impostors? Simply I suppose because there are few who think a man can understand medicine and surgery by instinct. But till the last ten or twenty years people in England thought that every woman was a nurse by instinct."

With appropriate training the nurse has become a professional woman—competent, trustworthy, and highly valued. The wide range of her services can be judged by the several chapters of this book which deal with the Red Cross, the growth of training schools, and public health nursing, including maternity and child welfare. There are useful accounts of State registration systems throughout the world, of insurance and pension schemes for nurses, of nursing journals, and of organizations that are maintained by nurses for the honour and interest of their profession. Miss Seymer appends a useful bibliography, and there are some thirty-seven illustrations of great general interest.

FORTHCOMING ANTHROPOLOGICAL CONGRESS

Last year, at a meeting at Basel, convened by the Royal Anthropological Institute of Great Britain, it was agreed by representatives of anthropology and ethnology from nine countries to establish an international congress on these sciences and to hold a session every four years, the first to be in London in 1934. Accordingly the congress is to meet at University College, London, and the neighbouring Wellcome Historical Medical Museum during the week beginning July 30th. At the inaugural meeting the Duke of York will welcome the delegates of Governments, academies, universities, and other societies and institutions, and the Earl of Onslow, the president of the congress, will deliver an address.

The main work will be done in eight sections, each with a British chairman. The section of anatomy and physical anthropology will be presided over by Professor G. Elliot Smith, that of psychology by Professor F. C. Bartlett, and that of demography and population problems by Professor C. B. Fawcett. The other sections deal with ethnography, African and American, arts and crafts, sociology, religions, and language and writing. An ambitious programme is mapped out for the five or six meetings of the section of anatomy and physical anthropology, whose central theme will be man's place among the primates. The principal subjects will be anthropological aspects of blood grouping, human and comparative; the comparative anatomy of the brain; diathesis or bodily habitus in relation to physical anthropometry, including a survey of asthmatic and rheumatic children and a study of racial features in the growth of the jaws; the growth pattern in children, with special reference to the skeletal, neural, lymphoid, and urogenital systems; special work on the role of the endocrines in growth; the study of sex and behaviour, including the menstrual cycle in man and primates and also lactation; various aspects of dentition; the localization of function, and the standardization of methods of measurements. Some of the subjects, such as regional anthropology and fossil anthropology, may be discussed in subsections. The section of psychology will consider the aims and methods of social psychology, psychological problems arising from contact of races, in particular the nervous strain and reactions arising from the impact of alien cultures, the social significance of modern developments in psychology, such as the application of psychological tests, and the significance of present-day trends in government, education, and physical and biological sciences. The section

of demography is to discuss the methods and technique of census-taking, also the relations of racial characteristics to internal distributions within populations, such characteristics, for example, as eye colour and visual acuity, physical race characters and occupations, and race and caste. The section of languages and writing includes in its programme the study of the use of speech and voice mechanism among different races, speech pathology, psychological evidence bearing on the existence of the word as a separate entity, the development of speech habits among children, and the difference between the motor and the auditory aspects of speech.

In addition to the sectional discussions there are to be a number of evening discourses, including a Huxley Memorial Lecture by Sir Aurel Stein, the great authority on Indian and Central Asian archaeology, and a discourse by Professor J. B. S. Haldane on the growth and tendency of anthropological and ethnological studies. A reception is to be given by the Government at Lancaster House, by the Royal College of Surgeons at Lincoln's Inn Fields, and by various museum authorities, and in the week following the congress visits will be paid to Oxford and Cambridge and to certain provincial cities. The list of vice-presidents includes the names of Sir Arthur Keith, Sir Humphry Rolleston, and the presidents of the various societies which touch on the subjects coming before the congress.

It should be made plain that the new congress will always meet at two years' interval between the international congress of prehistoric and protohistoric sciences, which was held first in London in 1932, and meets again at Oslo in 1936. The congress has also been arranged so that its meetings will fall in the same years as the Americanist Congress in Europe. That congress meets in Seville later in the present year, and it is hoped that workers in the American field may be able to attend both. The forthcoming event in London is being organized from the offices of the Royal Anthropological Institute, at 52, Upper Bedford Place, W.C.

THE BRITISH RED CROSS IN PEACE

The activities of the British Red Cross Society, as recorded in the annual report for 1933,[1] show continued growth in all departments. The number of voluntary aid detachments reached a total of 831, with a personnel of 21,486 members. The first two air ambulance detachments were registered in 1933. Reference has lately been made in these columns to the work of the Society's clinic for rheumatism, where 94,256 attendances were made last year, as against 86,929 in 1932, and the range of treatment and investigation has been widened. The blood transfusion service received the record number of 3,017 calls in the London area—an increase of 575 over the previous year; the number of donors on the roll is now 1,536.

The junior branch of the Society now numbers 370 "links," with a total membership of over 25,000 boys and girls. The usefulness of this movement as an educational instrument is increasingly recognized, while the senior branch benefits by the accession of numbers of young people brought up in sympathy with the traditions and ideals of the Red Cross.

The county branches of the Society have continued to develop their voluntary services to the public. They have provided 374 first-aid posts and patrols on the roads and sea beaches, and 603 emergency first-aid stations at large gatherings. Assistance is also given at hospitals, clinics, and welfare centres. Medical supply depots for the loan of surgical and nursing equipment to necessitous cases are established throughout the country, and now number 109.

The fifth Congress of French-Speaking Dermatologists and Syphiligraphers will be held at Lyons from July 19th to 21st of this year, under the presidency of Professor Nicolas of Lyons, when the exclusive subjects for discussion will be the aetiology and treatment of lupus erythematosus, diagnosis of chancroid bubo, and cutaneous complications of anti-syphilitic treatment. The membership subscription is 150 francs, which should be sent to the secretary of the Congress, 24 Rue Saint Hélène, Lyons.

[1] *Report of the British Red Cross Society for the Year 1933.* Published at Headquarters: 14, Grosvenor Crescent, London, S.W.1.

Reports of Societies

RELATION OF MORTALITY TO HOUSING DENSITY

At a meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine, held on May 25th, Dr. J. D. ROLLESTON presiding, a paper was read by Dr. PERCY STOCKS, medical statistical officer of the General Register Office, on "The Association between Mortality and Density of Housing."

Dr. Stocks, whose paper was largely occupied with tables and graphs, and a description of his statistical method, first compared the relation of child mortality to density per acre in a period before the Public Health Act (1861–70) with that for 1930–2, taking groups of urban and rural districts and county boroughs. At densities of less than one person per acre, into which category fell most rural aggregates, the present mortality rate for ages 0 to 5 was only 29 per cent. of what it was in the earlier period, and at a higher density—namely, five to ten per acre—comprising the present urban districts in the main, the relative mortality was lower still, being only 20 per cent. of the early figure. The crowding of houses together up to an average density of ten persons per acre had no apparent effect on the mortality of children, but in densities of over twenty per acre—that is, in most of the present county boroughs—there was the same relative excess in child mortality as compared with less dense populations which was apparent sixty-five years ago, although, of course, the actual mortality in dense and less dense areas alike had greatly diminished.

It had often been stated that the mortality risk increased with movement northwards in each class of area, the implication being that this was due to colder climate, more smoke, more occupations dangerous to health, or a combination of these. But if Great Britain were divided into successive zones of latitude (omitting London, the case of which must be separately considered), it would be found that, moving northwards, there was a progressive increase in the mean density per room until the Scottish industrial area was reached, while the density per acre was at its highest level in the zone which included the industrial area of Yorkshire and Lancashire, and then steadily declined on passing further north. The behaviour of the mortality rate for children under 5 bore a much closer resemblance to the trend of average density per room than to the trend of density per acre. The well-known north-to-south gradation of mortality rates seemed likely to arise from the gradation of overcrowding within the houses, and climatic differences between the latitudes had little effect on mortality. Dr. Stocks had set himself to disentangle the relations of mortality to the three factors of latitude, urbanization, and crowding within houses. The fact was established, he said, from a number of researches that within a given town the mortality risk, particularly in early childhood, was greater for occupants of more crowded houses than for occupants of less crowded ones, but this had been variously attributed to the direct effects of crowding, unfavourable industrial conditions associated with crowded areas, the poverty of which crowding was often a symptom, or the gravitation of the less fit into unsatisfactory conditions of housing, so that it was little wonder if the advantages predicted from housing improvement *per se* ranged from the utmost optimism to the utmost pessimism. The broad conclusion to be drawn from his own figures was that at ages over 5 it was not necessary to suppose that mortality from all causes combined was appreciably affected by climatic differences dependent on latitude within the limits of England and Wales, and probably Great Britain. The mortality of children under 5 from respiratory disease showed an increase on passing from the South Coast to the industrial North of England amounting to 42 per cent., even after allowance had been made for the effects of increasing density and of crowding per room, but there was a decline in this respect on passing still further north. Dr. Stocks's curves also brought out the advantage in respect of sunshine in the eastern part of England (except at a latitude which included the industrial area of

Yorkshire, where the effect of the smoke blanket from industrial towns to the west was observed), but apart from the effect of diminished sunshine in predisposing to rickets, which in its turn contributed heavily to bronchitis and pneumonia in young children and lowered resistance to infectious diseases, he was not convinced that there was any real evidence that the differences in average mortality experience between different parts of Great Britain had anything to do with climate.

Dr. Stocks also set himself to determine whether, with improved sanitation of towns, the crowding of people within their houses had assumed a greater importance in association with mortality than the crowding of houses together. London mortality was uniformly lower than that of the rest of England and Wales when districts of the same density per acre were compared, and this was also true, although the advantage was not so great, when districts of the same density per room were compared. The advantage of London, so far as mortality at ages under 5 was concerned, must derive partly from its southern situation, with consequent greater amount of annual sunshine. At ages over 5, although the climatic factor seemed to be unimportant, yet for some reason London again had in general an advantage, amounting to between one-fifth and one-third, over other parts of the country of the same density per acre or per room. At ages over 45, however, this advantage became less perceptible. Dr. Stocks confessed himself unable to explain the advantage of London. Was the greater triumph over environment by people living in the metropolis due to selective migration of the healthiest young adults to London, to a greater immunity against certain diseases afforded by living in the middle of a vast herd, to the better protection from the rigors of winter afforded by London amenities, to better facilities for medical treatment and more advanced public health, or to all of these? In the metropolitan boroughs infant mortality from congenital causes had no association with either measure of density, but from other causes the rate showed an increase at densities of over fifty per acre, and rose with increasing density per room. At school ages there was little relation with density per acre, but the rate rose with crowding from 0.92 persons per room upwards. For women the death rates from phthisis were actually highest at low densities per acre, but increased with room crowding. At later ages for all persons the effect of density seemed slight, and at ages over 65 scarcely appreciable. In England and Wales, excluding London, the corrected ratio for infant mortality from congenital causes showed, as in London, no association with density per acre, but rose with crowding per room. At school age densities of over thirty per acre had slightly higher rates, but the rise in the rate was more pronounced with crowding per room; and, again, at the other end of life, the effect of density by either measure was slight.

Dr. Stocks's general conclusion was that up to middle life the importance of crowding per room as a factor in mortality was now almost double that of density per acre. The results of overcrowding were far and away most serious at the pre-school ages, and it was here that the greatest benefits might be expected as a result of housing improvements in the future.

General Discussion

Sir WILLIAM HAMER mentioned that, three-quarters of a century ago, William Farr made the confident statement that large towns would never become so healthy as the country; but that prophecy had not been borne out. One possible cause for the marked decline in infant mortality since the early part of the present century was the Education Act, 1870, which meant the appearance in due time of a generation of mothers who had passed through the elementary schools and were able to take a more intelligent interest in the welfare of their children.

Professor MAJOR GREENWOOD said that, apart from his digression with regard to the special effects of diminished sunshine, Dr. Stocks's general thesis was that for practical purposes mortality was not in this country a function of climate. He himself remembered trying this out many years ago, the special subject being the mortality from respiratory diseases. The incidence of pneumonia and bronchitis was found to be enormously high in the North of England, but taking the figures for 1901–10, and the deaths from these diseases at ages 65–75, while the rate for England and Wales as a whole was 7.4 per 1,000 living, and that for Lancashire 12.6, the rate for the contiguous counties of Cumberland and Westmorland, where the same climatic influences operated, was only 4.8. This was completely explained by the great difference in housing density, but it illustrated the negligibility of the climatic factor.

Dr. J. D. ROLLESTON mentioned that he had recently received a work by Professor Robert Debré, a member of the League of Nations Committee of Health Experts on Infant Welfare in Europe, in which, with two colleagues, he had made a study of infant mortality in France and some other European countries, in urban and country districts. One of his most important conclusions was that the outstanding factor in infant mortality was the density per room and the various unhygienic conditions associated therewith. That was particularly well shown in a working class district of Paris, where, in spite of progress in other respects, living conditions in rooms were really deplorable. Dr. F. C. SHRUBSALL suggested that the true criterion was the hours of ventilation. In London tenements young children on the higher floors, though they got more fresh air in their rooms, were often kept in, whereas those on the ground floor were turned out, so that the latter, although they might have a worse time at night, enjoyed more hours of sunshine and ventilation during the day. Dr. E. W. GOODALL asked some questions with regard to the relation of mortality from measles and whooping-cough to housing density.

Dr. STOCKS, in reply, said that the relations of whooping-cough mortality to crowding were rather complex. Whooping-cough seemed to differ in this respect from measles, and he did not think that case mortality would necessarily follow the same rules as the actual mortality per 1,000 children in parts densely and not densely populated respectively.

RECENT WORK ON LEPTOSPIROSIS (WEIL'S DISEASE)

At a meeting of the Royal Society of Tropical Medicine and Hygiene, held at Manson House on May 17th, with the president, Sir LEONARD ROGERS, in the chair, Professor W. SCHÜFFNER read a paper on recent work on leptospirosis.

In his introductory remarks Professor Schüffner said that Holland enjoyed the doubtful privilege of harbouring two diseases which in other countries were supposed to be rare. One was post-vaccinial encephalitis, claiming numerous victims among children, the other was Weil's disease, or leptospirosis, which had come to the fore during the past ten or twelve years both in Holland and in her East Indian colonies. The incidence in Holland was greatest in the western coastal part of the country—an area situated below sea-level and much of it covered with water. Of 234 patients diagnosed in his own laboratory twenty-seven had died, giving a case fatality of 11.5 per cent., but fortunately the total number of deaths was small, only sixteen patients dying in 1932 and eleven in 1933 in Holland. Cases occurred throughout the whole year, but epidemic exacerbation appeared from July to October. Forty-five per cent. of the adult sewer rats in Holland carried leptospirae, and there were certain occupations (such as bargemen, fishermen, and slaughterhouse employees) in which the incidence was higher. "Water accidents" definitely predisposed, and here the lecturer had found that canal water polluted with refuse where the banks teemed with rats was particularly dangerous because of its leptospiral content. It had been found that guinea-pigs immersed in such water occasionally acquire the disease, provided the skin be slightly scarified, but culture of the leptospirae from naturally infected water had not been successful. The mucous membranes were probably also important avenues of infection, and diving, and swimming by the crawl stroke, enhanced this risk. The *p*H and salinity of infected water were important factors controlling the growth of leptospirae. The average incubation period

equalled 10.3 days, and a history of a "water accident" in the previous week or two was an important factor in the diagnosis; the alarming symptoms at onset also helped. Often there were distressing muscular pains, a heavily furred tongue, a leucocytosis with shift to the left, albuminuria, meningeal symptoms, and peculiar flushed conjunctivae or "red eyes." The latter feature was present in half of the cases of Weil's disease occurring without icterus, and under such circumstances the diagnosis was exceedingly difficult and needed confirmation in the laboratory. No such cases were ever fatal.

For brevity Professor Schüffner omitted further reference to the clinical diagnosis, but pointed out that the final decision of Weil's or no Weil's disease rested with the bacteriologist, whose diagnosis was based on (*a*) demonstration of leptospirae in the blood, (*b*) cultivation, (*c*) serological reactions. Leptospirae were readily demonstrated in the blood of infected guinea-pigs by dark-ground illumination, but this procedure was rarely successful in man. Centrifugalization was often of value, provided the plasma be separated from the precipitated corpuscles and examined in a thick layer. Before direct cultivation of blood for leptospirae preliminary passage through a guinea-pig was desirable. The coagulum should be triturated and injected into the peritoneal cavity, where the leptospirae might be detected as early as the third day. Leptospirae were most commonly isolated from the blood during the first three or four days of the disease, but in severe cases they might persist until the tenth day; examination of the urine was sometimes successful in the later stages, long after leptospirae had disappeared from the peripheral circulation. Agglutination tests were best carried out by formalized cultures of leptospirae, since such extracts were not dangerous to handle, they constituted potent antigens, and lysis of leptospirae, such as was sometimes encountered with living cultures, was avoided. After formalization "matting" of leptospirae due to acid agglutination sometimes occurred, but this could be prevented by using 1/2 per cent. instead of 2 per cent. formalin. Absorption tests could also be applied, thereby distinguishing between specific and cross agglutination. Clinical, serological, and epidemiological facts combined to show that there were three European leptospirae: (1) the cosmopolitan *Leptospira icterohaemorrhagiae* in rat and dog, the cause of classical Weil's disease; (2) *L. grippo-typhosa*, the infecting agent of swamp fever in Europe, the reservoir host of which is unknown; (3) *L. canicola*, causing a specific canine disease.

General Discussion

Dr. W. FLETCHER commented on the fact that 40 per cent. of cases of leptospirosis in Holland were of mild type unassociated with jaundice; in the Malay States the percentage with jaundice was even less. There he and his colleagues had found six different races of leptospirae classified by means of agglutination tests and by Pfeiffer reactions in young pigs. Guinea-pigs, however, which had recovered from infection with one strain had a considerable immunity to infection with other races. He suggested that the leptospirae of Holland might have resulted from the importation of strains from the Orient. Dr. E. HINDLE was not prepared to accept serological strains as distinct species, because of the overlap in serological reactions. In conjunction with Dr. Bruce White he had recently been able to isolate a specific soluble substance from spirochaetes which gave a precipitate with high dilutions of antiserum derived from animals infected with homologous spirochaetes. While there were many different water strains, the various human and rat strains all reacted to specific soluble substances isolated from rat strains, which included one from Malay. Major BROWN referred to results obtained by the adhesion test, which consisted of putting up serum, leptospirae, and a suspension of micro-organisms; if the serum was specific the bacteria would adhere to the leptospirae. By means of this reaction he had no difficulty in separating *hebdomidis* from *icterohaemorrhagiae* or from the water strains. Regarding acid agglutination in formalized cultures, he wondered whether the neutralization of formalin by pyridin, as recently recommended by Burke, would be of help. From a clinical viewpoint "red eyes" could not be considered pathognomonic of leptospirosis; he had noted it with great frequency in other forms of epidemic jaundice.

Dr. FINDLAY referred to epidemics of jaundice in England, Norway, and Sweden, where leptospirae were absent; these were sometimes associated with subacute yellow atrophy of the liver, and occasionally terminated in cirrhosis. He asked whether any patients with Weil's disease who had not shown jaundice had died with these complications. Dr. C. M. WENYON referred to the early observations made by Brown and himself indicating the identity of *Leptospira icteroides* with *L. icterohaemorrhagiae*, and asked Professor Schüffner about the leptospiral haemoglobinuria which he had described in Sumatra.

Dr. MANSON-BAHR referred to the difficulty of diagnosis now that clinicians had to recognize Weil's disease without jaundice, and were no longer able to regard "pink eyes" as pathognomonic of leptospirosis. Since his discovery of the disease in London in 1922 he had never met a case. He asked for more information regarding the use of antileptospiral serum in Holland. Dr. PARISH spoke on the subject of active immunization, and asked if a vaccine prepared against the true virus strain protected animals against the curious dog strains which Professor Schüffner had described. Professor WARRINGTON YORKE discussed the dangers of differentiating species merely on serological grounds, illustrating his remarks with reference to trypanosomes.

In reply, Professor SCHÜFFNER reviewed the evidence whereby the three different European strains were differentiated, and confirmed that there was a form of haemoglobinuria associated with leptospirosis; slides of microscopical sections were then shown, demonstrating leptospirae in the kidneys of such cases. Regarding specific serum treatment, he cited a case of a laboratory-acquired infection in which leptospirae were found in the blood after the first few hours of illness; five hours from onset serum therapy was instituted, with remarkably satisfactory results.

TROPICAL MACROCYTIC ANAEMIA

At a meeting of the London Association of the Medical Women's Federation, held at B.M.A. House on May 22nd, Dr. LUCY WILLS spoke on tropical macrocytic anaemia.

Dr. Wills gave an account of her work on this subject during the last five years. In 1928 this condition was described in pregnant women under the title "pernicious anaemia of pregnancy," and was a serious cause of maternal and foetal mortality in the large cities of India. The blood picture resembled that of true pernicious anaemia, but the condition could be distinguished from idiopathic pernicious anaemia by the following characteristics: (1) earlier age incidence and the association with pregnancy; (2) absence of natural remissions except after delivery; (3) the presence of free hydrochloric acid in normal amounts in the gastric content of the majority of cases; (4) absence of a raised indirect van den Bergh reaction, or an increase in urinary urobilin; (5) absence of nervous involvement; and (6) slight differences in the blood picture—for example, less poikilocytosis and polychromasia and higher white cell counts. The cases were frequently febrile, but no evidence could be obtained of an infective or toxic origin. The general course of the disease and the response to adequate doses of liver or liver extracts suggested a nutritional origin. Further study showed that an identical form of anaemia also occurred among men and non-pregnant women, which also supported the view that the disease was a deficiency state, the higher incidence and the greater severity in pregnant women being due to the added demands on the organism during pregnancy. A dietetic survey among the hospital classes in Bombay revealed a deplorable state of multiple deficiencies, with no significant difference in the diet of sufferers from this anaemia. All the diets were particularly low in vitamins A and C. Experiments with rats fed on diets based on those in common use among sufferers from this anaemia resulted in the production of a macrocytic anaemia, which, however, was

associated with the multiplication of Bartonella organisms in the blood stream. A search for similar organisms in the patients gave negative results, and large doses of vitamins A and C had no curative effect. Similar experiments with monkeys (Bartonella-free) again led to the production of a macrocytic anaemia, but in both the control animals, which were receiving additional rations of vitamins A and C, and the experimental animals, when the ration of the vitamin B complex was increased by the addition of marmite to the diet the anaemia was rapidly cured. The trial of marmite in human cases was equally successful, 15 to 30 grams of marmite daily resulting in a maximal response and a rapid rise in the red cell count in both pregnant and non-pregnant cases. At this time Castle and his co-workers were publishing their work on the factors, intrinsic and extrinsic, necessary for the formation of the haemopoietic factor in liver. As the tropical cases has apparently normal gastric secretion it was assumed that the intrinsic factor was present, but that the missing dietetic factor was Castle's extrinsic factor. After the publication by Dr. Wills of her results with marmite the Boston workers tried a similar autolysed yeast extract, and found that, though inactive alone, when incubated with normal gastric juice it was highly active in the cure of idiopathic pernicious anaemia. These workers postulated vitamin B_2, or some factor closely associated with it, as the extrinsic factor in pernicious anaemia.

At this time, Dr. Wills said, further work with standardized vitamin and yeast preparations in relation to tropical macrocytic anaemia had already been started by her, with the help of Miss H. Chick. For the test of these preparations uncomplicated cases under controlled conditions were used, and the activity of a preparation was judged by the height of the reticulocyte peak and the subsequent rate of blood regeneration. Vitamins B_1, B_2, and B_4 were inactive curatively when given in the purest available form—that is, as acid clay and extract of egg white, or of watery yeast extract of known vitamin potency ; further, preparations of marmite free from these vitamins were still active curatively. The vitamin B complex was therefore excluded as the haemopoietic factor in marmite curative in tropical macrocytic anaemia, and also presumably as the extrinsic factor in pernicious anaemia. Further experiments showed that the haemopoietic factor in marmite was heat-stable, and was neither precipitated nor inactivated by 80 per cent. alcohol. Whole yeast was inactive, but Dr. Wills suggested that this might be due to the fact that yeast cells were resistant to gastric digestion, rather than to the absence of the haemopoietic factor. She summed up the present position as follows. Tropical macrocytic anaemia is a deficiency dyshaemopoietic anaemia due to the lack of the haemopoietic factor in the liver, known as the pernicious anaemia factor. The disease is distinct from idiopathic pernicious anaemia, and is not necessarily associated with the other causes of macrocytic anaemia—diarrhoea, defective gastric secretion, or pregnancy. The deficiency was, in her opinion, due to a dietetic lack of some substance, present in marmite, which is not one of the known B vitamins, but which is probably identical with the extrinsic factor described by Castle for idiopathic pernicious anaemia. The tropical anaemia is cured by the administration of the missing factor, as marmite, or of the pernicious anaemia factor present in liver.

Dr. HELEN MACKAY asked if there was any explanation of the absence of nervous symptoms and natural remissions, and of the fact that there was no record of the disease in children, who were normally more susceptible to deficiency diseases than adults. Dr. WILLS, in reply, said that as regards nerve changes there was possibly not time enough for these to develop in the young patients, but it seemed more likely, in view of the age of some of the non-pregnant patients, that the nerve lesions of true pernicious anaemia were associated with the gastric lesion rather than with the absence of the haemopoietic factor, which would explain the absence of nerve lesions in the tropical form. She thought that further study might show that remission did occur in exceptional cases, but had no explanation of the absence of recorded cases in children.

CORRESPONDENCE

Lister and Chemical Antiseptics

SIR,—Although far away from the close friendship of Sir Watson Cheyne and the relationship of Sir Rickman Godlee with Lord Lister, I had the privilege of being his last assistant in his private practice, and when he ceased clinical work he left private and hospital patients under my care. Consequently I often heard from his lips many of his thoughts and of the different kinds of opposition against which he had to contend in the early days of his practical application of Pasteur's discoveries to medicine and surgery.

Among other things, it does not appear to be generally known that one of Lister's sayings was that he " at once recognized that boiling water is the best antiseptic in existence," and in his earliest experiments he proved it to his own satisfaction. In spite of this fact he always maintained that it was a safer, an easier, and a more fool-proof method—as matters then stood—to keep everything connected with a wound in constant contact with a chemical antiseptic. He believed that in those days the employment of heat alone required more detailed care in its application than lotions, and also far greater experience and education in bacteriological knowledge than was then attainable. From the methods I saw employed in the last twenty years of the nineteenth century I have no doubt he was right. The reasons that made carbolic acid his earliest selection would occupy too much of your space to describe. It was chosen after a careful comparison with heat and other antiseptics in their relations to practice. Among the many qualities that led to its adoption there remain many that have not been surpassed in value by the antiseptics of to-day.—I am, etc.,

London, W.1, May 22nd. G. LENTHAL CHEATLE.

The Medical Charities

SIR,—With Dr. Arnold Gregory's plea for the charities all those who have worked for them will heartily sympathize. His diagnosis of the situation, set forth in his three numbered paragraphs, is only too correct. That the incomes of the charities are incommensurate with the calls made upon them is not the fault of the British Medical Association, whose Council and whose *Journal* have long and often dinned this into the ears of Branches, Divisions, and members. In my view the charities need an assured subscription income at least double that which is now collected for them by their own local secretaries and through the B.M.A. Bridge drives, concerts, dances, etc., as proposed by Dr. Gregory, may with luck bring in enough in any one year to justify the effort expended on them, but they are palliatives merely, and they tend to be supported mainly by those who already do their duty by subscribing, not by the others ; further, they can seldom be repeated annually with continued success. These methods are suitable for charities which appeal to large sections of the public, not for such limited communities as the members of our profession in a given area.

Dr. Gregory's idea of an endowment fund is sound enough, though £25,000 is of little use (the income would be under £900 a year) ; £250,000 would not be too much. This sum cannot be expected from any feasible " campaign," however " intensive " : but it can be obtained by the investment of all legacies, a policy which both the leading charities would like to put in practice, but are not able to. Last year, for instance, Epsom College spent about three-quarters of the legacies received, and

was able to invest only the remainder; this year, I understand, the prospects are much better, owing to good fortune with bequests, and I fancy the same is true for the Royal Medical Benevolent Fund. If these charities had sufficient subscription incomes all legacies could be funded, as of course they ought to be. Few practitioners who are in a position to leave charitable bequests think of the Benevolent Fund and Epsom College. If they did, the accumulation of ample endowment funds would not take very many years. You, Sir, and the Editor of the *Lancet*, have both done your share in trying to make medical testators realize this.

Dr. Gregory's suggestion for enlisting the wives of doctors appears to ignore the work of the R.M.B.F. Guild, which is run entirely by these ladies, and very well run too. I agree with him that personal canvassing is far more valuable than letter writing—but it takes up a lot of time. I trust that he will not think I am being unhelpful in deprecating his feverish week of bridge tournaments and sales of work; I wish him all success in his efforts to rouse the profession, but I feel sure that the two things to concentrate upon are annual subscriptions and legacies.—I am, etc.,

London, S.W.7, May 26th. HENRY ROBINSON.

The Cancer Problem

SIR,—It is curious to read letters from people of such eminence as Mr. Hastings Gilford, whom I regard as among the most learned in Britain on the subject of cancer, and Mr. Lockhart-Mummery, one of the foremost of our clinicians, which take diametrically opposite views as to whether civilization has caused an increase in the incidence of cancer. In spite of the admirable reasoning from Mr. Gilford, the case can never be proved until the uncivilized are sophisticated enough to have a registrar-general's report on the causes of death, which in itself would make them so civilized as to destroy its value. We do know, however, that wild animals, including birds and fish, suffer from cancer, though most diseased animals are soon killed by their natural enemies. The evidence of missionary doctors is that cancer is common among natives; indeed, cancer of the buccal cavity, owing to betel chewing, is a commoner form of cancer in India than elsewhere in the world, though statistics as regards the total population may not be available. I have seen cancer in South African natives and the Zulus, who are chiefly vegetarians, and also among the Samoyedes in the Arctic Circle, a meat-eating race, who never see a green leaf.

Civilization has progressed to such a degree that we should expect that if cancer had existed in the remote past—as we must suppose it did, for we regard it as disordered life, and therefore it probably is as old as life itself—it ought to be more prevalent at the present time, for we must presume that the Bronze Age spoke of itself as civilized as compared with the Stone Age; the Iron Age with that of the Bronze, and so on with each succeeding advance up to the present time. There is, however, one method by which civilization influences the cancer rate which I have never seen referred to. If there are, let us suppose, one hundred causes of death, and civilization eliminates twenty of these, the same number of people will die, because they cannot live indefinitely, but now their deaths must be divided among the eighty remaining causes. This will enable the unscientific statistician, among whom most of us must be classed, to look with astonishment at the increase in the ratio of certain diseases. We have decreased the death rate from small-pox, typhoid, diphtheria, tubercle, and all surgical diseases to such an extent that increase in those that remain must be marked, cancer among them. Whether Mr. Hastings Gilford will seize on this to support his argument or not I don't know.—I am, etc.,

London, W.1, May 23rd. DUNCAN C. L. FITZWILLIAMS.

Toxins and Emulsions

SIR,—Since Dr. G. Norman Myers's letter in the *Journal* of March 17th (p. 504), to which we replied on March 24th (p. 557), we have been waiting for the publication of the results of his investigations, which appeared in your issue of May 26th.

The general conclusions arrived at by Dr. Myers with regard to the non-toxicity of super-lethal doses of toxin when mixed with emulsion upon subcutaneous injection confirm our findings in great detail. We commented in our letter of March 24th upon a number of points in connexion with Dr. Myers's experiments. In his paper he appears to have altered the description of his technique from "the oils and fats when mixed with aqueous solutions of lethal doses of toxins so as to form emulsions," to "aqueous solutions of the toxins were mixed with the emulsions (already formed) immediately prior to injection." This alteration is of considerable importance for, after all, these points of technique are of the essence of the problem.

Dr. Myers concludes from his experiments on injecting the layers after centrifugalization that "the toxin has a greater solubility or affinity for water than for oil," yet it is clear from his own experiments that the question of solubility in oil does not arise, and this because such solubility could not be in any way influenced by the degree of emulsification. The only change which such a fine degree of emulsification could bring about would be an increase in the rate of solution, but no alteration in the partition coefficient. Thus we can safely eliminate the solubility explanation when, from the discussion at the phenomenon necessary to explain these results. It is indeed strange that Dr. Myers should return to this solubility explanation, when, from the discussion at the end of his paper, he himself would appear to have adopted our suggestion that the phenomenon is one of adsorption.

Finally, Dr. Myers, in his original letter, wrote that he began his investigations three years ago; in his paper he has antedated it by two years; we would be interested to know if we may regard this date as now fixed.—We are, etc.,

Physiology Department, St. Mary's Hospital Medical School, May 28th. V. G. WALSH. A. C. FRAZER.

Strangulated Hernia

SIR,—I confess to a feeling of disappointment with Mr. Wood Power. After writing what was in many respects an excellent paper, seriously marred only by the unaccountable priority which he gave to taxis over the far more scientific postural treatment in the hope of reducing an apparently early case of strangulated hernia, he now definitely states that he sees no objection to the general practitioner employing taxis in *early* cases. He gives the chief causes of difficulty in reduction quite correctly as "increasing oedema and distension of the bowel due to venous stasis; and secondly, the contraction of the abdominal muscles." Quite so. Provided the constriction is not too tight, postural treatment is the scientific method of relieving venous obstruction. The spasm of the abdominal muscles in the early cases is due to *pain*, and morphine and locally applied warmth are the correct means of relieving this, when the spasm will relax. On

the other hand, pressure, even not unduly strong, over any part of the strangulation will increase the pain, and inevitably increase the muscle spasm. So it was in the bad old days (not so very long ago) that world-celebrated surgeons advised that taxis, if done at all, should always be done under a general anaesthetic.[1] I suppose Mr. Power would not advocate this.

But quite apart from these considerations there are so many other possible things that might conceivably mislead a man not very well versed in surgery into errors—they are all somewhat uncommon, but are fully described in many old textbooks. I am not going to discuss them here.

Mr. Power himself, in his original paper, says: "The general practitioner, as a rule, has a limited experience in dealing with such cases; it is far safer to leave the attempt to the surgeon, who is generally better fitted to judge whether taxis is advisable or not." And after this he goes on to make his unaccountable lapse, which he emphasizes and makes more definite in his letter in your issue of May 26th. Now his avowed and admirable intention in writing the original paper was to suggest methods by which "strangulated hernia should become a tragedy of the past." These are his own words. If this object was attained nothing else obviously need be said. But further on he proceeds to describe means by which Vick's mortality rate of 18 per cent. in 11,000 yearly cases might be reduced. He then gives his own mortality of 17.94 per cent. in seventy-eight cases. So Mr. Power has managed to reduce the mortality by 0.06 per cent.! We may take it for granted that Mr. Power is a skilful surgeon, and, moreover, his use of local analgesia is wholly admirable. Therefore the cause must be delay, possibly associated with injudicious outside attempts at taxis.

In many cases the patient with a hernia is quite used to it "coming down," and feels quite unconcerned about periodically replacing it himself. This fact alone should provoke thought. Then the day comes when he cannot "get it back." He has a really good "go" at it. Bad pain comes on, perhaps with vomiting. The other members of the family have a good "go" at it, and, finally, the poor general practitioner has a "go" at it, possibly without the adjective "good" in front of it. Then the surgeon sees the case—God knows how long after the onset! Consequently the mortality rate continues to be an apparent reproach to modern surgery. The rest of Mr. Power's letter does not call for comment.—I am, etc.,

London, May 27th. ROY HUCKELL.

SIR,—On the question of taxis Mr. R. Wood Power (May 5th, p. 787) invites the opinion of the general practitioner.

I have had a long experience of country practice, in which strangulated hernia is not infrequent. I always attempted taxis, and have succeeded in all cases where seen early, with six exceptions. These six patients were placed on the inclined plane, given a dose of opium, and heat was applied to the part. After a sleep of a few hours the patient, on waking up, found the hernia in each case gone. I do not understand the objection to trying taxis in strangulated femoral hernia. In all the cases I have seen I have found it successful.

Looking back on over forty years of practice I can only recall one of my cases in which it was thought necessary to operate, and this was first seen by me on the second day.—I am, etc.,

W. H. LEWIS, M.B., B.Sc.

Llansantffraid, Mont., May 28th.

[1] Cheyne and Burghard: *Manual of Surgical Treatment*, 1913, vol. iv, p. 471.

Concealed Incision of Interval Appendicectomy

SIR,—Mr. Ernest Cowell will find the incision he writes about (May 26th, p. 947) described in the second edition of Comyns Berkeley's and my *Textbook of Gynaecological Surgery*. It is known as the Küstner-Rapin incision, and was first described in 1896. I have employed it for a great number of years in certain cases, and have very frequently removed the appendix through it. The proceeding is, as a rule, very easy, but there are occasions when it is not—namely, when the appendix is retrocolic, lying high and adherent along its whole length to the colon. The skin incision should be slightly curved with the concavity upwards, not downwards, so as to correspond with the natural creases of the part. It is not necessary to incise under the rectus muscle—a central incision will do as well.

A most important step from the point of view of future concealment is to suture the subcutaneous fat, for if this is not done the skin adheres to the aponeurosis, and when the patient stands up an ugly gutter appears, which the indrawn hair renders very conspicuous. It is also essential to keep the wound strongly compressed by a pad for several days, for otherwise a very troublesome haematoma may form in the dead space under the skin. —I am, etc.,

London, W.1, May 28th. VICTOR BONNEY.

Criticism of Ante-Natal Work

SIR,—Although in retirement I still take an interest in the *Journal*, and especially in articles on obstetrics, and so I read Mr. A. J. Wrigley's "Criticism of Ante-natal Work" (*Journal*, May 19th, p. 891) with more care than usual. I have often thought of offering some criticism of the many articles and addresses on obstetrical subjects which have appeared during the last ten or twelve years, but I did not like to pit my limited experience as a general practitioner against that of the various male and female professors, lecturers, and specialists who were giving their experience for our benefit. And now comes Mr. Wrigley's lecture, with its exposure of some of the ante-natal work. For some years I examined all the women who engaged me, but always used the knowledge gained as a guide for the labour, and as I had not the technical skill I never attempted to correct any malpositions or think of induction Now it seems that, quite unconsciously, I was following the correct practice.

Mr. Wrigley says: "Good work is being done by ante-natal supervision in the detection and treatment of various conditions that have been complicated by the pregnancy—for example, chronic heart disease." Some years ago, while I was talking to Dr. Archibald Donald of Manchester on ante-natal work, he said that if a pregnant woman has heart disease she'll not need to go to an ante-natal clinic to have it found out; and I agree with him. It is probable that murmurs are detected and treated, and possibly with the same results as the "malpositions" and "disproportions."

From January, 1883, to June, 1885, I was assistant to Dr. Farquharson in Coatbridge. There were over 200 confinements in the practice every year. Dr. Farquharson was a fine obstetrician who never hurried a confinement. During these two and a half years there was one woman who was ill, and she recovered. Dr. Farquharson said he had had only two or three cases of puerperal fever in his twenty-one years' practice in Coatbridge, and no deaths. (He attributed the recoveries to the administration of chlorate of potash, as recommended by the great Simpson.) Eclampsia was unknown. I remember that all the patients had an abundant vaginal secretion, which stuck to the fingers. The children were fat and healthy, and one patient after another would say, "Aye, it was

fed on tatties and soor milk." These women lived largely on porridge and milk, with tea and bread-and-butter for breakfast ; potatoes and sour milk, or Scotch broth, or potatoes and herring, for dinner ; tea, bread-and-butter at tea-time ; and perhaps more porridge, or peas brose, and buttermilk for supper. Beef and mutton were at a minimum. That is, their diet was laxative and diuretic, and did not irritate either the heart or the kidneys, and the kidneys could easily excrete any poisons generated in the foetus or the mother. Is the secret for the prevention of eclampsia and some of the puerperal fever not to be found in a plain, non-irritating diet? Buttermilk (sour milk) can be obtained in only a few districts, but ordinary milk could be skimmed and made into koumiss.

It would be difficult to get women to feed on the Coatbridge diet, and, alas, for the Scotch broth, vegetables are very dear, and herrings are now dear and scarce ; formerly vegetables and herring were abundant and cheap. On the other hand, we still have eclampsia and puerperal sepsis in our midst, and the labours are dry, with hardly any vaginal secretion to protect the mucous membrane. It would be interesting to know how midwifery practice is in Coatbridge to-day. If this letter should meet the eye of any doctor practising in the Gartsherrie Rows (the Lang Raw, Cornish Raw, Wee Square), Ellis's Buildings, perhaps he will record his experience for our benefit.—I am, etc.,

Dunblane, Perthshire, May 24th. JAMES GARDNER.

SIR,—Which are we tending to foster nowadays—care of maternity or scare of it?—I am, etc.,

May 26th. E. L. C.

Capacity for Work after Fracture of Spine

SIR,—Dr. Owen L. Rhys, in his most interesting paper, published on April 14th (which, owing to mischance, I have only just seen), states that twelve out of 270 patients with fractured spine were able to return to their ordinary work. He does not differentiate here between cases where the bodies were crushed and cases where only transverse processes were fractured. Would he very kindly state exactly how many men in his series with crushed vertebral bodies were able to return to their full work, as I am collecting statistics on this point. My own experience is that very few of such cases are ever able to do their full work again.—I am, etc.,

PAUL BERNARD ROTH, F.R.C.S.

Newcastle, Staffs, May 26th.

Medical Referees

SIR,—Dr. R. M. B. MacKenna (May 26th, p. 965) calls attention to a question of the first importance—the semi-divine powers delegated to medical referees. It seems that the written opinion of a referee, based upon whatever evidence, is held sacred (officially) for all time: that it may not be questioned, no matter how mistaken and prejudicial it may be. It is no exaggeration to assert that if a medical referee, having gone mad or colour-blind, or merely pig-headed, decrees that a white man is black, that white man *is* black (officially), and must continue to be regarded as black. I put this to a medical referee the other day. He agreed whole-heartedly.

If there be any who question the assertion I shall be happy to supply evidence based upon cases that have come within my personal knowledge.—I am, etc.,

Walsall, May 28th. FRANK G. LAYTON.

Nutrition

SIR,—Dr. Campbell Watt, in his letter of February 17th, after sincerely congratulating " the English working classes on the variety and quality and quantity of their diet," and upon the fact that they do themselves uncommonly well, modified this slightly in his letter of April 28th by stating that statistics show that " most, except the lowest-paid classes, consume more than their requirements." He thus gives the impression that it is only a small minority of the English who suffer from malnutrition.

Dr. Campbell Watt advocated, on February 17th, a practical study of the problem, examining individuals in their everyday life. This is done every year by medical officers of health and various Commissions, who have the necessary experience not to confuse the effects produced by malnutrition with the effects due to " ill-health, heredity, congenital defect, or to physiological or psychological reactions to environment other than food."

The M.O.H. for Bethnal Green in his report for 1932 states: " A large proportion of the population are living at an extremely low level." The M.O.H. for Birmingham—1932. " Owing to the long-continued and widespread unemployment in the district many of the children were not thriving, through lack of proper nourishment." The M.O.H. for Wolverhampton—1932: " There is a distinct increase in malnutrition figures of school children. It is doubtful whether the figures represent the whole picture. There appears to be established here a definite link between unemployment and the malnutrition of children." The Social Survey Committee of the Hull Community Council published a report in the middle of 1933, stating: " The diet of unemployed men's children showed a serious omission of nutrition foods, and cannot but result in continuous ill-health." A special committee of the Save the Children Fund came to the following conclusions: " There are many thousands of children within the danger zone of impairment of physique and health, and there was a residuum whose health is already impaired and whose future as citizens and as parents is being imperilled by the conditions under which they are now compelled to live." Dr. E. H. T. Nash, at the B.M.A.'s 101st Annual Meeting, said: " There was a serious increase in mortality among young adults of slum population, as a result of poor nutrition due to poverty."

These reports, if space permitted, could be multiplied tenfold, but I think that they should convince Dr. Campbell Watt that the English as a whole do not do themselves so well. He may, however, assert that it is not due to underfeeding, but simply to a faulty balance in the rations consumed. In practical life one must realize that the amount and quality of rations consumed is largely an economic question, and depends upon the income of the family. We have already seen in these reports that it is this factor, and not a faulty balance, that causes malnutrition. Let us, however, take a few English families' budgets as instances:

In the Finsbury (London) M.O.H. report, 1932, several are listed, of which these are representative: Ten persons living in two rooms, 14s. 6d. wages, 17s. 6d. relief ; eight persons in one room, wages £1, relief 18s. ; nine persons in two rooms, transitional benefit £1 17s. 6d. ; nine persons in two rooms, wages £1 10s. Hammersmith (London) M.O.H. report, 1932: Husband, wife (expectant mother), three children, 10, 8, and 5, net income after deduction of rent 19s. 3d. The dietary of this family is listed in full. The meat (5 lb. of target mutton) is bought in the market on Saturday night for 1s. Stale bread only is used, etc.

After deducting such items as " rent, coal, clothing, beer, tobacco, artificial silk stockings, dances, cinemas, and football matches " from these typical family budgets I am sure that Dr. Campbell Watt will easily compile a dietary which is sufficient in quantity and quality.

As for the B.M.A. diets, Dr. M'Gonigle, honorary secretary of the B.M.A. Nutrition Committee, in a letter

to the *British Medical Journal* of July 29th, 1933, stated that " there exists to-day no generally accepted, standardized, or satisfactory method of assessing the nutritional state of individuals " ; also " there exists considerable doubt as to the possibility of assessing with any degree of accuracy the true nutritional condition of any given individual " by the means of a formula combining in various ways height, weight, and age. So that any dietary at our present stage of knowledge, purporting to maintain a hypothetical normal nutritional state, must of necessity be unscientific and unreliable. Apart from the fact that, owing to economic conditions, many English families are not even receiving the B.M.A. standard dietary, it appears as if it would be rather difficult for any adult male to maintain normal health on 10d. a day for meals, an average of about 3½d. per meal, even if he had a balanced diet.

Dr. H. A. Jardine, in her letter of February 24th, shows clearly how abundant food stores, ironically termed " surplus," are being destroyed. In addition, import duties and restriction quotas raise the prices and tend to place the food still further out of the grasp of our undernourished countrymen. Famine does not exist ; a large proportion of food stores is either lying idle or is being destroyed ; a large proportion of the population is suffering from the effects of malnutrition. The remedy to humanitarian scientists is obvious. The compilation of dietaries that to some extent justifies these conditions does not conform to the purpose of our profession.—I am, etc.,

London, E.5, May 23rd. S. LEFF, M.B., B.S.

The Control of Obesity

SIR,—For those who may also be struggling against the temptation of the flesh in the shape of fat, starch, pastry, bacon, and potatoes, may I be permitted to give another personal experience of Dr. Douthwaite's No. 1 diet, to cheer up those who may be depressed by the experience of " M.D." (May 19th, p. 919).

Beginning on April 22nd, and adhering to the diet, but with almost complete substitution of bread or toast by " energen " or " ryvita," my results are as follows:

April	22nd,	weight	12 st. 8 lb. (in pyjamas) (normal for height, 10 st. 8 lb.)
,,	29th,	,,	12 st. 5 lb.
May	6th,	,,	12 st.
,,	13th,	,,	12 st.
,,	20th,	,,	11 st. 11 lb.
,,	27th,	,,	11st. 10 lb. (result of a little butter and scones).

While the self-denial of butter and potatoes, in particular, cannot be described as " pleasant," and though one rises from the table still hungry—as all good physicians say one should—I cannot honestly say there has been any real distress beyond an annoyance at seeing others at table gorging themselves on cheese, boiled puddings, and pastry. The sleeplessness is common to both " M.D.'s " and my experience, and was notable in my case, as I am a very sound sleeper, but it passed off in the third week entirely. Physical fatigue was perhaps undue in the third week, but mental concentration was never impaired, and during this fourth week was particularly tested.

I agree with " M.D." that fat and sugar are probably the prime causes of obesity, and it is just the butter and bacon that one misses. I fancy the physical fatigue may be due to the limiting of carbohydrate. But personally I intend to " stick it " to below 11 st., and my main reason is because I have no trace of a heretofore constant flatulent indigestion, and because of the entire disappearance of " rheumatic " pains and of a beautiful lessening of " embonpoint."

I cannot agree that to diet is to be miserable, and, whilst to be fat may cause one to laugh, it is also apt to be a cause of laughter in others. One great point of this diet is that it does not interfere with one's working. Personally I have considerable intellectual work and forty or fifty miles motor driving daily, and at no stage have I felt unfit for it.—I am, etc.,

May 22nd. " SLIMMER."

Alleged Poisoning by Oysters

SIR,—The case of Mr. Charles Frederick Wimble against the Royal Victoria Hotel, St. Leonards, for supplying him with oysters which were held by the jury to have brought about an attack of typhoid fever is of very great importance, as it raises the question whether our existing laws as applied to such cases merit revision.

Here we have a case of a man who goes to a hotel where he partakes of a meal which, among other things, consists of a dozen or so of oysters. Some time later he is found to be suffering from typhoid, and he thereupon concludes that the oysters which he had eaten were solely responsible. He sues the hotel proprietors for damages, and a sympathetic special jury find that the oysters were the actual and only cause of the attack of typhoid and award £525 in damages. Apparently from the report published there was no evidence whatever that either the oysters in question, or any other oysters sold in that neighbourhood, had been contaminated with typhoid bacilli, and apparently also no attempt was made to find out if there was a typhoid carrier handling Mr. Wimble's food in his own home or elsewhere. In October there are still numbers of flies which are quite capable of carrying *B. typhosus* from any exposed excreta on to Mr. Wimble's milk-jug, cheese, cold meat, etc., and I now suggest that it is infinitely more probable that the disease in question was communicated in this way. It has been clearly demonstrated some time ago that oysters which were artificially contaminated with pure cultures of *B. typhosus* when placed in fresh sea-water were able to free themselves from the germs completely in twelve hours. In other words, the common oyster has a wonderful power of rapidly freeing itself from infective germs by means of an excellent mechanism of its own. I consequently think that it is highly undesirable that a decision such as this should be allowed to go by unchallenged.

Should the question be permitted to pass without being fully and properly sifted, discredit will be placed on the character of a very excellent and desirable article of human food, and an important industry, which has been seriously neglected in the past and for which strong efforts are now being made to help it to revive, will have its future seriously prejudiced.

I now beg to give it as my opinion that cases such as this, where questions of a highly technical nature are at issue, should not be submitted to the decisions of juries of laymen, but, on the contrary, should only be put before juries of men who have had thorough scientific training.—I am, etc.,

Kirk Michael, May 26th. E. G. FENTON.

SIR,—The success plaintiffs have had in recent years in actions for negligence should not pass unnoticed. To the cases of fur dermatitis must be added the many instances of food-poisoning and the present example of typhoid. If the inference drawn from daily observations be correct, the incidence of gastric influenza, to which food-poisoning, paratyphoid, typhoid, typhus, and dysentery belong, is steadily rising, and much injustice will be caused by upholding the present procedure. As evidence points to our having entered, in 1930, into a long era of gastric influenza, both law and medicine would do well to pay immediate attention to the susceptibility of the individual and to re-sift the present-day knowledge of epidemics. That a new inquiry is urgently needed is

shown by the omission in this case of any reference to the fact that the epidemic of typhoid in Hastings coincided exactly with the epidemics in Yorkshire, the Midland counties, and the Balkans. In Yorkshire the epidemic began in a town where the water supply was above reproach. It spread to another town where the water supply contained typhoid bacilli years before the epidemic began, and still does after the epidemic has vanished. These facts, to which must be added the most important one of all, that epidemics are cyclical, disprove the view that infections begin through outside contamination. Even carriers do not play the part accredited to them. Indeed, the evidence points to most epidemics arising within the individual at the instance of climate.

For an infection to become full-blown it is necessary for the bacteria responsible to have undergone a series of mutations, and herein lies the explanation of susceptibility. Climate causes certain mutations to occur, and the steps are more quickly trodden in diseased than healthy subjects. Taking any collection of individuals an outside factor having no connexion whatever with any bacterial body may so lower the resistance of one or more as to enable the final mutation to occur. In others it may advance the mutation a few steps only, and in a third class, where there are no pathogenic micro-organisms, may have no influence. This explains why in an epidemic the manifestations of disease vary and different micro-organisms are found.

The Hastings epidemic was no different from any other, and as cases of typhoid occurred where no oysters were taken and others who partook of the supposedly contaminated fish failed to get typhoid, the only just inference to draw is that any factor might have precipitated the infection in the plaintiff. Even a pure article of food at a certain time may precipitate the common cold and the respiratory form of influenza, but it would not be fair to allow an action to be brought against the purveyor.

Epidemics of so-called food-poisoning were particularly rife during the last quarter of 1933, and such large sums of money have been paid to complainants to avoid the publicity of a court of law as to make one fearful of speculative legal actions. Of course, no effort should be spared to render food as natural and pure as possible, but if any success is to be achieved in reducing the incidence of these infections it is to be obtained only by making the individual healthier.—I am, etc.,

London, W.1, May 23rd. J. E. R. McDONAGH, F.R.C.S.

Poisoning by Ground Ivy

SIR,—I have read with interest the letter by Dr. W. G. Aitchison Robertson in your issue of May 12th (p. 872), and also that by Dr. F. William Cock (May 19th, p. 922).

In the first place, may I raise the question as to why Dr. Robertson fails to use scientific botanical nomenclature in his letter, for in "one fell swoop" he appears to confound three natural orders of plants by his use of the term "ground ivy" and the subsequently appended remarks. May I be permitted to refer to these three orders?

1. Ground ivy, as such, is the recognized popular term for a plant of the order Labiatiaceae, a small purple-mauve flower of bitter aromatic smell, and used by the ancients to flavour beer—verily a neglected, common, not unagreeable, harmless hedgerow plant.

2. Dr. Robertson may have been referring to some member of the *Hedera* genus, possibly a variant on our *Hedera helix* or common ivy. This plant is a member of the Auraliaceae. It is bitter in flavour, but carries abundant yellow-green flowers, eagerly sought by late-flying moths, etc. Later it bears crops of nutritious black berries, which are consumed with avidity by various wild birds. This plant is certainly devoid of ill effects on the large majority of people; but it is quite conceivable, as Dr. Cock states, that certain people may possess an idiosyncrasy to it.

3. Then there is the well-known "poison ivy or oak," *Rhus toxicodendron*, an American immigrant to this country, and one which is justly infamous as a contact poison plant.

I can bear out Dr. Cock's statement that the "tea" from the leaves of *Hedera helix* has a country reputation as an anodyne in carcinoma. In conclusion, may I plead for the more common use of scientific terminology in describing botanical subjects in connexion with medical science, for unfortunately—as can be seen from this correspondence—Dr. Robertson's letter, while being interesting, leaves considerable doubt in the mind as to what plant really causes the symptoms he describes.—I am, etc.,

London, S.W.1, May 22nd. DAVID H. HALER.

SIR,—I thought that I had made it plain that it was that very common variety of ivy which grows over banks and under trees in almost every garden, and which was known to the older botanists as "ground ivy" or *Hedera terrestris* (Sowerby). It is still almost universally known in country districts by this name, and has not the slightest relation to the labiate, *Nepeta glechoma*, either in appearance, scent, or habitat. The latter grows on hedgerows or in open pastures, impoverishing the ground, and so could not in the remotest degree be confounded with the creeping ivy to which I refer.

My object was merely to draw attention to the danger of handling this very common plant, and to help in the recognition of a painful condition, the cause of which might be easily overlooked. My impression is that the idiosyncrasy to this plant is not so infrequent as might be imagined. One correspondent informs me that he obtained some relief from frequent applications of calamine lotion and sedative doses of potassium bromide and valerian. The dermatitis which this variety of ivy gives rise to is very similar to that produced by toxicodendrol, lobinol, or paraphenylendiamine.—I am, etc.,

Bournemouth, May 29th. W. G. AITCHISON ROBERTSON.

Industrial Cancer and Blood Pressure

SIR,—Your excellently concise summary of present knowledge regarding cancer and chemical stimuli prompts me to point out that, as the result of some research work I have done in connexion with workers who are liable to pitch cancer, I find predisposition is closely associated with a modification of the basic (diastolic) blood pressure. When this is increased there is an increased pressure on the blood in the arteries, with the result that the movements of the blood cells are modified, and the red cells are unable to carry their full complement of oxygen to the tissues, which are consequently lowered in vitality.

A prolonged exposure over some years to small quantities of carbon monoxide gas tends to reduce the oxygen-carrying capacity of the blood, whilst raising its basic blood pressure. It follows that a man who starts work in a pitch or fuel works with his blood below par is already predisposed, and similarly a man of 60 who hitherto has escaped pitch warts becomes more and more liable to them as senile anaemia sets in. In both of these types the basic blood pressure is raised and an adequate supply of blood fails to reach the tissues.

Workers in fuel works may be classified as: (*a*) good health, houses, and homes; (*b*) indifferent health, houses, and homes; (*c*) poor health, houses, and homes. It will be found that the age at which these three grades develop pitch warts is somewhat as follows: (*a*) 50 to 60; (*b*) 35 to 50; (*c*) 20 to 35. A hereditary tendency is always closely associated with the blood group and with its oxygen-carrying

capacity, whilst a family tendency to right or wrong feeding simply accentuates the association.

When the oxygen supplied to the tissues is reduced in quantity the cells divide rapidly in order to increase the area of absorbing surface. This is shown in hyperpiesia in the form of arteriosclerosis, when the raised basic pressure, by compressing the openings of the vasa vasorum, prevents an adequate supply of oxygen being carried to the tissue cells of the arterial walls. It is also well to note that a large percentage of these patients die from cancer. In parasitic tissues the parasite demands oxygen, which it derives from the tissue cells; these cells consequently are deprived of oxygen, and divide rapidly in the hope of obtaining more, the superfluous division forming a "growth." In patients whose blood is affected by animal parasites, as in syphilis, as well as in those whose blood is stated to be affected by a "virus," one finds that the basic blood pressure is always raised, and consequently the carriage of oxygen to the tissues is reduced.

In patients suffering from industrial cancer there are two constant factors present—namely, a prolonged exposure to CO gas and a raised basic pressure, both of which tend to reduce the supply of oxygen to the tissues. The introduction of poisons or toxins into the system tends to raise the pressure.—I am, etc.,

Swansea, May 27th. G. ARBOUR STEPHENS.

A Case of Abortus Infection

SIR,—An unmarried woman, aged 39, developed a rise of temperature in March last, diagnosed provisionally as due to influenza. The temperature subsided within fourteen days. In the fourth week a pronounced rise led to further investigation, the Clinical Research Association reporting that the blood agglutinated *Brucella abortus* in 1 in 1,000 dilution. The interesting feature about this case is that apart from a mild headache the only physical sign was a very severe inflammation of both nipples, lasting a few days in the week of relapse (fourth week). Prior to this the nipples were very undeveloped. No further relapse has occurred at the end of nine weeks.—I am, etc.,

Crewe, May 15th. W. L. ENGLISH.

Reflex Inhibition

SIR,—The existence of an element of reflex action in epilepsy is well known (examples are given by Kinnier Wilson). For example, a flick on the nose of one patient would produce a fit. No less instructive are cases where a particular stimulus or act will prevent an attack. The following case illustrates this.

A male patient, 21 years of age, has suffered from occasional fits since childhood. He can always tell when a fit is coming by a tingling sensation in his left leg. He then calls out to whoever is in the house for help. This help, as described by his mother, consists in immobilizing his left leg, by kneeling on his toe (while he is sitting down), and pressing downwards on the knee. If she "gets to him in time" the fit can always be prevented in this way.

A possible explanation of this phenomenon is that the general abnormal cortical excitation, which apparently occurs in a fit, in such cases can commence only from a particular area of the cortex. We may suppose that for the cortical excitation to commence and spread, the chain of events—aura, localized muscular movement (of the leg in this case), unconsciousness, and general muscular movement (convulsions)—must proceed uninterruptedly, if at all. If this chain of events be interrupted by preventing the onset of localized muscular movement (of the leg here), general abnormal excitation of the cortical area concerned is prevented (or perhaps its abnormal spread is prevented). An analogy would be the prevention of general cortical inhibition (of sleep—Pavlov) by some external stimulus or act (for example, preventing a person sleeping by shaking his shoulder).—I am, etc.,

Perivale, Middlesex, May 15th. R. L. WORRALL.

Extra-Licentiates of the College of Physicians

SIR,—In his interesting review of Dr. Hobhouse's edition of Claver Morris's diary Sir D'Arcy Power repeated in your last issue a not uncommon misconception of the nature of the extra-licence of the Royal College of Physicians of London.

The extra-licentiates could practise anywhere in England save within London and the circuit of seven miles. This licence was first granted in 1660 under the new Charter of Charles II, after examination by the President and the elects—not, as in the case of the licence to practise *intra urbem*, by the Censors Board. In 1859, after the passage of the Medical Registration Act of 1858, the College of Physicians made a new by-law enabling their extra-licentiates, on payment of five guineas, to become licentiates, with the right to practise in London.

Claver Morris became an extra-licentiate in 1683 because he wished to practise in the provinces as a physician. The degree of D.M. would entitle him to do this, but could not be granted at Oxford until eleven years had elapsed from his baccalaureate—that is, in 1691.—I am, etc.,

London, W.1, May 28th. CECIL WALL.

Chemical Factors in Germinal Impairment

SIR,—It is amusing that Dr. W. Spencer Badger did not, in his letter (May 26th, p. 965), advocate that the State should forbid the distribution of literature which recommends chemical contraceptives but merely the "sale" of such literature. However, proof has not yet arrived that a chemical contraceptive can cause the birth of a defective individual. And if it comes to be proved that the use of chemical contraceptives can cause the production of a serious number of defectives, the better policy should be followed of taking a restrictive law off the statutes instead of putting another one on. Practically all the birth control and eugenic problems would be entirely, or very largely, solved by my formula: Sterilization and abortion should be available to any person with two children, and no woman of the poorest classes should have more than two confinements.—I am, etc.,

London, S.W.7, May 26th. B. DUNLOP.

Osteopathy

SIR,—Mr. A. S. Blundell Bankart, referring to the Osteopaths Registration Bill (in his letter to the *Journal* of May 19th), says he thinks "that medical men at least should be acquainted with the truth about this movement." His attempts to make plain the truth about osteopathy are sadly misleading to those who know little about the subject, and are rather amazing to those of us who are familiar with osteopathic work. To say that "osteopathy has nothing whatever to do with 'bone-setting' or with manipulative surgery or the therapeutic manipulation of stiff joints," is a statement which Mr. Bankart would find very hard to substantiate, and to follow that statement immediately with the information that "manipulative surgery is now a recognized branch of orthodox practice" would suggest to his unbiased readers that, as surgeons are now beginning to use manipulation as part of orthodox surgical practice, there is no room for the osteopath in this line of work.

Mr. Bankart would have us believe that osteopathic work is concerned with displacements of the spinal

vertebrae and that these displacements cause direct pressure on the blood vessels and nerves leaving the intervertebral foramina. I believe this to be an entirely erroneous interpretation of present-day osteopathic principles. Certainly the osteopath is concerned with even the least disturbance of blood and nerve supply to any part of the body, and he is trained to recognize abnormalities in the spinal column or elsewhere which give rise directly or indirectly to interference with the circulation and nerve stimuli. As I understand it, these spinal displacements, which Mr. Bankart describes as imaginary, are, in the main, static fixations of articulations which have been carried beyond the normal range of movement, and held in abnormal positions by sustained unequal tension of ligaments, muscles, and surrounding soft tissues. If the abnormal condition of the joint and surrounding tissue is allowed to continue it eventually gives rise to either a local anaemia or congestion. This in turn results inevitably in disturbance of function in that part of the body, "remote" or otherwise, which is dependent on the blood and nerve supply from the affected area. Owing to the highly cultivated tactile sense, which can only be developed by years of special training, the osteopath is able to detect these fine deviations from the normal, vertebral or otherwise, which are usually not apparent to the surgeon.

Mr. Bankart classes osteopaths with chiropractors, and dismisses them both as an American "stunt." As I know nothing about chiropractic work I must not express an opinion, but I am sure that many medical practitioners who make use of osteopathy will agree with me that the work is based on simple and sound pathological teaching, and the results achieved by a good osteopath may be safely left to speak for themselves.—I am, etc.,

DOROTHY WOOD, M.R.C.S., L.R.C.P.

London, W.1, May 23rd.

The Services

COMMISSIONS IN THE R.A.M.C.

The War Office announces that applications are invited from medical men for appointment to commissions in the Royal Army Medical Corps under the new conditions announced recently.

Candidates will be selected for commissions without competitive examination, and will be required to present themselves in London for interview and physical examination on or about June 6th, 1934. They must be registered under the Medical Acts, and normally must not be over the age of 28 years.

Successful candidates will in the first instance be given short-service commissions for five years, at the end of which period they may either retire with a gratuity of £1,000 or apply for a permanent commission. Permanent commissions will be given to officers selected from among those who wish to make the Army their permanent career.

Full particulars of the conditions of service and emoluments, also forms of application, may be obtained on application, either by letter or in person, to the Assistant Director-General, Army Medical Services, the War Office, London, S.W.1.

THE I.M.S. DINNER

The annual dinner of the Indian Medical Service will be held at the Trocadero Restaurant, London, on Wednesday, June 20th, at 7.15 p.m. Major-General Sir Leonard Rogers, K.C.S.I., C.I.E., F.R.S., will preside. Tickets and all particulars may be had from the joint honorary secretary, Sir Thomas Carey Evans, Hammersmith Hospital, Ducane Road, W.12.

Universities and Colleges

UNIVERSITY OF OXFORD

In a Convocation to be held in the Sheldonian Theatre on Wednesday, June 20th, at noon, it will be proposed to confer the degree of D.Sc., *honoris causa*, upon Professor Archibald Vivian Hill, F.R.S., M.A., Sc.D. (Cambridge), nominated by the Chancellor on the occasion of the Encaenia following his installation.

The President and Fellows of Magdalen College have elected John Carew Eccles, M.A., D.Phil., Staines Medical Fellow of Exeter College and formerly Rhodes Scholar of Magdalen College, to an official Fellowship and Tutorship of the College in Natural Science. Dr. Eccles, who will take up his new duties on October 1st, 1934, is a graduate in medicine of the University of Melbourne, obtained first-class honours in the Oxford Final School of Natural Science (Physiology), and was awarded in 1927 the Christopher Welch Scholarship and in 1932 the Rolleston Memorial Prize.

UNIVERSITY OF CAMBRIDGE

Dr. G. Norman Myers (Sidney Sussex College) has been appointed university demonstrator in pharmacology for a period of three years, and Dr. H. A. Krebs of Hamburg university demonstrator in biochemistry for the same period.

Dr. Ffrangcon Roberts has been appointed an examiner for the Diploma in Medical Radiology and Electrology, 1934, Part II, in the room of the late Dr. Stanley Melville. Mr. G. Stead, M.A., and Professor Sidney Russ, D.Sc., have been appointed examiners for this diploma, Part I, 1935; and Dr. A. E. Barclay, Dr. G. H. Orton, and Dr. E. P. Cumberbatch examiners for Part II, 1935.

At a congregation held on May 26th the following medical degrees were conferred:

M.D.—The Hon. W. S. Maclay, M. D. Nosworthy, R. W. Windle, J. B. S. Lewis.
M.B., B.CHIR.—G. W. Whittall, E. R. Hargreaves.
M.B.—J. Glyn Jones.
B. CHIR.—C. M. Barker.

Fearnsides Scholarship

The E. G. Fearnsides Scholarship, which is for clinical research on the organic diseases of the nervous system, is open to members of the University or of Girton or Newnham Colleges who are graduates or titular graduates in medicine, or to graduates or titular graduates in arts who have passed Part II of the Natural Sciences Tripos. Applications must be sent to the Registrary of the University before June 27th 1934.

UNIVERSITY OF LONDON

GUY'S HOSPITAL MEDICAL SCHOOL

The following awards have been made for 1934:

Entrance Scholarship in Arts (value £100): H. F. Lunn. *War Memorial Scholarship in Science* (value £200) and *Entrance Scholarship in Science* (value £100): Divided between A. Bloom and A. R. Bradley. *Confined Scholarship in Science* (value £100): Divided between D. Tumrasvin and H. Wormald.

UNIVERSITY OF LIVERPOOL

The Council has appointed Henry Cohen, M.D., F.R.C.P., lecturer in medicine in the University, to the chair of medicine, as from October 1st, 1934, in succession to Professor John Hay, who retires at the end of the current academic session.

SOCIETY OF APOTHECARIES OF LONDON

The following candidates have passed in the subjects indicated:

SURGERY.—P. E. Cresswell, M. T. Curran, R. Fleming, S. Kay, S. Klein, R. Sugerman, C. E. Wetherall, W. E. Whaite.
MEDICINE.—P. C. Alexander, C. N. Chowdary, G. W. Hardy, C. C. Joannides, S. Kay, A. G. Manley, J. Mason, S. E. Roberts, E. C. Rowlands.
FORENSIC MEDICINE.—P. C. Alexander, F. M. Chalkley, M. V. Matthew, M. A. Walsh Conway.
MIDWIFERY.—A. E. Ginn, L. A. Lewis, H. Paroulakis.

The diploma of the Society has been granted to P. C. Alexander, A. E. Ginn, G. W. Hardy, S. E. Roberts, E. C. Rowlands, R. Sugerman, and C. E. Wetherall.

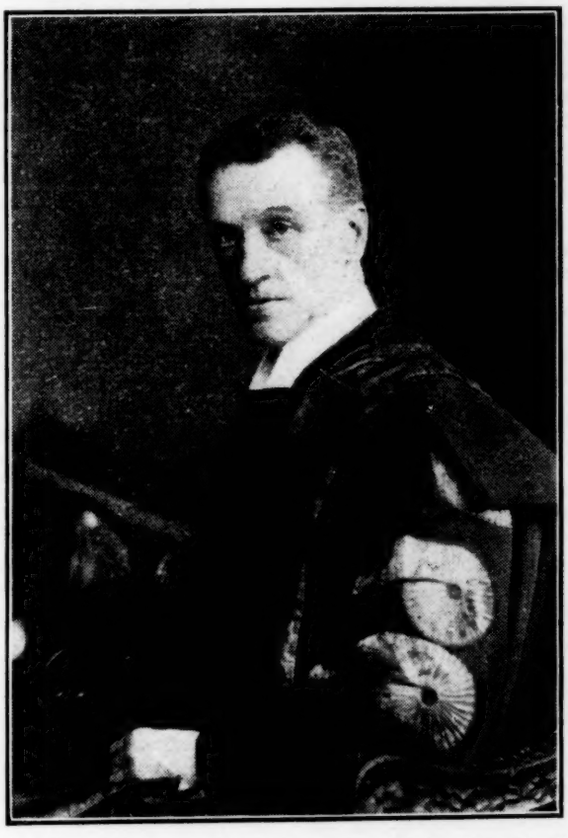
Obituary

ANDREW FULLERTON, C.B., C.M.G.

M.D., M.Ch., F.R.C.S.I., F.A.C.S.

Ex-President, Royal College of Surgeons in Ireland; Emeritus Professor of Surgery, the Queen's University of Belfast; Consulting Surgeon, Royal Victoria Hospital, Belfast, and Belfast Hospital for Sick Children; Colonel A.M.S.

We announced in our last issue, with deep regret, the death on May 22nd of Professor Andrew Fullerton, which, while not unexpected, has filled the hearts of his colleagues in the Belfast Medical School with a sense of irreparable loss. He was born in 1868, the son of the Rev. Alexander Fullerton of the Methodist Church in Ireland, and received his education in Lurgan College and the Queen's College, Belfast. Already distinguished as an undergraduate, he obtained first-class honours in the M.B. examination of the Royal University of Ireland in 1890, and the M.D. degree in 1893. In 1901 he became a Fellow of the Royal College of Surgeons in Ireland, and in 1913 he proceeded to the M.Ch. degree of the Queen's University of Belfast. Some four years after obtaining his qualification he spent in the West Kent Hospital, Maidstone, and the Miller Hospital, Greenwich; returning to Belfast, he commenced practice in 1894. He was for a time engaged in general practice, but, as an honorary demonstrator of anatomy under the late Professor Symington, was acquiring the accurate and detailed knowledge which was the basis of his surgery.



His first hospital appointment was to the surgical staff of the Belfast Hospital for Sick Children, and shortly afterwards, in 1902, he was appointed an assistant surgeon to the Royal Victoria Hospital. He served these institutions with unwearying energy and skill for over thirty years, and gained for himself the affection of his colleagues and the unshaken confidence of all who knew him. In 1915 he had the honour of being invited to become a consulting surgeon to the British Expeditionary Force in France with the rank of Colonel A.M.S., and his record of service there not only confirmed the wisdom of this appointment, but brought a wider recognition of the Belfast school of surgery. He was gazetted C.M.G. in 1916, C.B. in 1919, and was three times mentioned in dispatches.

In 1922 he was elected an Honorary Fellow of the American College of Surgeons, and in 1924 he succeeded Professor Thomas Sinclair in the chair of surgery in the Queen's University of Belfast. In 1926 he became President of the Royal College of Surgeons in Ireland, being the first surgeon resident outside Dublin to hold this office. In 1931 he was president of the Association of Surgeons of Great Britain and Ireland. He was also a past-president of the Ulster Branch of the British Medical Association, of the Ulster Medical Society, of the Belfast Medical Students' Association, and of the Queen's University Services Club. He had joined the British Medical Association in January, 1893, and was a member of the Representative Body in 1906 (Toronto), 1907 (Exeter), 1908 (Sheffield), and 1909 (Belfast). On the last of these occasions he also served as honorary secretary of the Section of Diseases of Children, becoming vice-president of that Section at the Annual Meeting at Aberdeen in 1914. When the Association met at Cardiff in 1928 he was vice-president of the Section of Surgery.

Professor Fullerton was a prolific writer on surgical subjects, and published some seventy papers in various journals. His most important contribution was the article on "Gunshot Wounds of Kidney, Ureter, and Bladder" in the *Medical History of the War*. As a urologist he established for himself an international reputation: he made many original observations of importance, being the first to note the significance of unilateral diuresis, and to employ the retroperitoneal exposure of ureters in the early diagnosis of renal tuberculosis. In 1930 he delivered the Campbell Oration, taking as his subject "Progress in Urology." His patience and care were apparent in his case-taking, in which no relevant detail was too minute to escape record. A rapid and skilful operator, his fertile mind was continually employed in the evolution of some improvement of technique by which the surgical risk to his patient might be lessened or his comfort enhanced. He loved his teaching because he loved his subject and he loved his students. His own energy and enthusiasm seemed to have endowed him with enduring youth, and attracted to him the unstinted devotion of his pupils. He was profoundly moved when, on his resignation last October from the professorship of surgery in the Queen's University of Belfast, he was made the recipient of a silver salver from his class.

Andrew Fullerton was a man of singular directness. His inherent simplicity and honesty rendered him incapable of guile. He had the gift of making friends, and with him friendship was lifelong. His principal recreation was golf, and it was a source of pride to him to have been elected captain of the Royal County Down Golf Club at Newcastle. He was a Past Master of the Queen's University Masonic Lodge, and was a Prince Mason.

He was twice married; his first wife, who died in 1926, was Caroline, daughter of the late Mr. Thornton Bulloch: the children of this marriage are two sons and a daughter. He is survived by Mrs. Fullerton, who is the daughter of the late Rev. R. D. French and the widow of the late Mr. Randall Cooney, F.R.C.S.I. Her unremitting care did all that was possible to mitigate the suffering of a long and painful illness, borne with magnificent courage and fortitude.

[The photograph reproduced is by Messrs. Lafayette.]

Mr. GEOFFREY JEFFERSON writes:

The death of Andrew Fullerton robs not only the Belfast school of one of its most distinguished members, but many others of a friend whose sincerity and steadfastness will keep his memory green. Private friendship is not a subject for public parade, but I must add my meed of praise for those qualities which to me did him most honour. Chief among these were his complete honesty and integrity, next his application and his industry, then his pride in his university and his city. For Belfast and its medical school, and for Queen's University as a whole, he had the greatest love. He believed in their importance implicitly, as well he might, but he knew that a university must deserve respect, not merely claim it. He knew that corporate virtue is won only by the untiring efforts of individual men, and he was primarily all for work. He won many honours, but he thought of them chiefly in relation to his university rather than as personal gains. Eventually he learned also how to play, and certainly his captaincy of the Newcastle Golf Club, County Down, was almost, of all his later honours, that which most greatly pleased him. Like many people with definite and individual personalities he could not hope to please everybody, nor did he wish. But he knew when to make concessions, and the affection and respect of his juniors, as well as of his peers, were the return of what he gave to them. Personally I mourn the loss of a friend who is, as all true friends must be, quite irreplaceable.

DAVID OGILVY, M.D.

Medical Superintendent, L.C.C. Mental Hospital, Epsom

We had to announce, with much regret, in our last issue the death, on May 13th, of Dr. David Ogilvy, medical superintendent of the London County Mental Hospital, Long Grove, Epsom. Dr. Ogilvy was educated at Trinity College, Dublin, where he distinguished himself in surgery in his final examination, and took his M.D. degree in 1899. He was a good Rugby football player, and played for his university. He held the post of surgical resident at the Jervis Street Hospital, Dublin, and was for a time medical assistant at the Central Criminal Asylum, Dundrum.

In 1899 he began his career in psychiatry, and came under the influence at Wakefield of that distinguished physician Professor Bevan Lewis. He proceeded thence to Banstead Mental Hospital in the London County Council service, where he rose to the position of third assistant medical officer under Dr. Claye Shaw. In 1902, on the opening of Horton Mental Hospital, he was transferred as second assistant, and two years later was promoted to senior assistant medical officer. At this well-known hospital he was later brought into association with the late Dr. J. R. Lord, whose keenness and interest no doubt influenced Ogilvy's outlook.

In March, 1912, he was promoted to be medical superintendent of Long Grove Mental Hospital, in succession to Sir Hubert Bond, on the latter's appointment to be a Commissioner of the Board of Control. He realized that he had entered at this hospital on a distinguished heritage, and he faithfully devoted the remaining twenty-two years of his life to its welfare. His was perhaps a conservative mind, but it was never closed to new ideas and impressions. In this respect one may instance the interest he took in the development, on progressive lines, of occupational therapy in both male and female wards, and the fact that to his persistent advocacy was due the employment of a male occupations therapist for the prosecution of helpful occupations among male patients in fuller measure than could, in his judgement, be secured by confining the initiation of such work to women officers, as was the case in other London mental hospitals. He also took a deep and helpful interest in the work of the Mental After-Care Association for discharged patients, and he served on the council of that association.

Dr. Ogilvy was held in esteem and affection alike by his medical colleagues, his staff, and his patients. His devotion to duty, his sense of justice, his outspoken cheerfulness, endeared him to all who came into contact with him. No difference of opinion left one in doubt as to his genuine honesty of purpose. He was a candid friend to those who gained his confidence, and concealed beneath a certain genial bluntness of manner one was ever conscious of an essentially humane and lovable personality. All who knew him will desire to express their deepest sympathy with his widow and three children.

F. N. G. STARR, C.B.E., M.D., F.R.C.S.

Professor Emeritus of Clinical Surgery, Toronto; Vice-President, British Medical Association

Widespread regret has been expressed in this country at the loss sustained by general medicine, as well as surgery, in consequence of the death last month of Professor F. N. G. Starr after a week's illness. An outstanding diagnostician and surgeon, as well as a successful teacher and educational pioneer in the University of Toronto, he was also for many years a driving force in the development of the Canadian Medical Association.

Frederick Newton Gisborne Starr was born at Thorold in 1867, and received his early education in Ontario public and high schools, from whence he entered Victoria College, Toronto. In 1889 he graduated M.B., C.M., and subsequently proceeded M.D. After a long period of post-graduate work in England, France, and Germany he returned to Canada and commenced practice in Toronto. He became general secretary of the Canadian Medical Association in 1893, and held the post until 1901, remaining a member of its executive council, and holding the post of president in 1927. The influence of his wise guidance and stimulating encouragement was most marked; the inevitable difficulties of such an organization in the widely separated townships in a vast Dominion were steadily overcome, and the beneficent activities of the association were increasingly widely appreciated. The British Medical Association paid tribute to his devoted work and great success by electing him a vice-president.

His surgical skill was early apparent, and he held appointments at the Toronto General Hospital, the Toronto Western Hospital, the Hospital for Sick Children, St. John's Hospital, and the Women's Cottage Hospital. He was later appointed consulting surgeon to each of these institutions. He devoted himself also to the advancement of the growing University of Toronto, was a member of the board of governors, and held the rank of emeritus professor of clinical surgery. He was largely responsible for the founding of the Royal College of Physicians and Surgeons of Canada, was a councillor from 1907 to 1911, and was the first surgeon to become its president, a post he held from 1931 to 1933. He had been president of the Academy of Medicine, Toronto, in 1926. Very highly esteemed also in the United States, he was elected in 1932 a Fellow and first vice-president of the American Surgical Association. He was also a Fellow and past vice-president of the American College of Surgeons. With all his many obligations he never forsook his deep interest in student life: from its inauguration in Toronto he had been closely associated with the Nu Sigma Nu Medical Fraternity, and had acted as an adviser to the student members of the Toronto Chapter. He was also a member of the Alpha Omega Alpha Honor Medical Fraternity.

During the war Dr. Starr held a commission as major with the R.A.M.C. in France, and was twice mentioned

in dispatches. The C.B.E. was subsequently conferred upon him. He was a Fellow of the Royal Geographical Society. He retained an active interest in athletic and sporting pursuits, and was a member of two golf clubs, the Toronto Hunt and Jockey Clubs, the Royal Canadian Yacht Club, and the Royal Canadian Institute. He is survived by his widow and three brothers. His uncle, Frederic Newton Gisborne, was the originator and first manufacturer of the earliest submarine telegraph, and connected Cape Breton and Newfoundland by nearly ninety miles of cable.

The death of Dr. WILLIAM BROGDON PATERSON at his home at Aigburth on May 11th takes from Liverpool a practitioner who was widely known and respected by a large circle of colleagues, patients, and friends. For the last four years he had struggled against serious illness ; and when, a few months ago, the inevitable end became clear to him and to those who were looking after him, he met it with quiet courage. He was born in 1865, his father being minister of Tranent, East Lothian. He was schooled in medicine at Edinburgh, where he qualified M.B., C.M. in 1887, afterwards becoming resident physician at the Cowgate Dispensary, Edinburgh. Later he came to Liverpool as house-surgeon to the Royal Southern Hospital. For some time he was medical officer to the Liverpool Medical Mission, and afterwards he became a partner of the late Dr. John Grimes of Grassendale, with whom he remained until 1903. Until a few years ago he was associated in partnership with Dr. H. R. Hurter of Cressington. His colleagues honoured him at various times by electing him first librarian and later vice-president of the Liverpool Medical Institution. His small stocky figure, with bright and kindly eyes shining from behind rather shaggy eyebrows, became well known to the men and women of all walks of life who made up the field of his large and widely extended family practice. His skill as a practitioner kept pace with the rapid advances of medicine, and to his professional duties he brought a discipline and integrity of purpose which left him with neither time nor inclination to waste words or energy on small talk or trivialities. At times life had hit him hard, but he emerged out of disappointment and sorrow to a fine sensitivity and sympathy, which was all the stronger for his reticence. His love of the beautiful in life brought him delight in art, in the engaging loveliness of children, and most of all in the contacts of his daily work. He possessed that austere sense of fitness and restraint which is associated with the classical Greek spirit, but with it were fused a serene kindness and an unusual power of feeling. A man's relations with children are a revealing touchstone of its quality ; I had the intimate privilege of seeing how, busy as he was, he treated children with winning dignity and seriousness, so that they loved him and regretted he could not stay longer on his visits. I learned too his power not only of saying the right thing but of giving that rare sympathy which has an astringent and strengthening quality in it. He leaves a widow, whose comradeship and courage supported him always, especially in the last years. To her his colleagues offer their sympathy.

ROBERT COOPE.

Dr. WILLIAM RUTHERFORD WOOD, who died at the age of 35, on May 17th, of septicaemia following the removal of tonsils, was one of the most promising of the younger practitioners in the Oxford district. The son of a medical man, he was educated at Queen Mary's Grammar School, Walsall, and after matriculation served with the R.F.C. during 1917 and 1918. After the war he went up to Pembroke College, Oxford, and in 1923 took second-class honours in natural science (physiology). Proceeding to St. Thomas's Hospital, he qualified M.R.C.S., L.R.C.P. and B.M., B.Ch. in 1926, and completed his training with a year as resident at the Radcliffe Infirmary. He then entered general practice in Oxford. In 1929 he married Elinor, the daughter of Mr. and Mrs. Smith-Hill of Braithwaite, Cumberland ; she, with two daughters, survives him. Although never robust of physique, Wood enjoyed all outdoor pursuits, and was never happier than when boating or swimming in his beloved Thames, or floundering in Alpine snows to improve his considerable prowess on skis. He lies buried at Thornthwaite, surrounded by the hills which were his spiritual home. Shy by nature, and always diffident of his own powers, "Bill" Wood was no showman. Medicine has lost a conscientious servant, and humanity a loyal and sympathetic friend.

H. N. B.

The death took place on May 23rd at his residence, 73, Murrayfield Gardens, Edinburgh, of Dr. H. C. GIBSON, who was well known in connexion with the neurological activities of the Ministry of Pensions. After a medical course at Edinburgh University, Hugh Craigie Gibson graduated M.B., C.M. in 1904. During the war he served as a major in the Royal Army Medical Corps, and after doing duty for some time at the Edinburgh War Hospital, Bangour, was placed in command of the special Neurological War Hospital at Glen Lomond Sanatorium. He afterwards became director of the Ministry of Pensions neurological clinic, Glasgow, and was attached to its neurological clinic in Edinburgh. Dr. Gibson was a member of the British Psychological Society and of the British Medical Association, which he joined in 1906.

We regret to announce the death, on May 16th, of Dr. RICHARD HENRY CYRIL GOMPERTZ of Barnstaple, at the age of 57. He was educated at Bedford Grammar School, King's College, London, and King's College Hospital, where he had a distinguished student career, gaining the junior and senior Clothworkers' scholarships and the Sambrooke scholarship. He obtained the M.R.C.S. and L.R.C.P. diplomas in 1904, and, after graduating in 1907 as B.Sc. M.B., B.S. (gold medal, with honours in medicine and surgery), was appointed demonstrator in physiology at King's College and surgical registrar to the hospital. He served throughout the war, mainly in France, with a temporary commission in the R.A.M.C., and was mentioned in dispatches. After a few years as medical officer to Berkhamsted School, Dr. Gompertz went to Barnstaple in 1923, joining a partnership there, and was appointed honorary medical officer to the North Devon Infirmary, with charge of the *x*-ray department. At Barnstaple he continued his close interest in the first-aid movement, and was medical officer to the local Voluntary Aid Detachment. Dr. Gompertz was a man with intellectual gifts beyond the ordinary, and found time to cultivate varied tastes outside the work of a busy general practitioner.

The following well-known foreign medical men have recently died: Dr. MAX VON KRYGER, emeritus professor of surgery, Erlangen, aged 72 ; San.-Rat Dr. HANS AXMANN, an Erfurt dermatologist, aged 72 ; Dr. ANTON LIEVEN of Aix-la-Chapelle, a prominent syphilologist ; Professor ROBERTO NOVOA SANTOS, professor of general pathology at Madrid, aged 49 ; Dr. FRANCISCO FABRÉGAS Y MAS, ex-president of the Academy of Catalonia ; Professor PIETRO LIGABUE, dean of the Faculty of Medicine of Florence ; Professor THEODOR GÖTT, professor of children's diseases at Bonn, aged 53 ; Dr. RODRIGUEZ CADARZO, rector and professor of anatomy at the University of Santiago de Compostello ; Dr. SCHREVE, formerly secretary of the Dutch Society of Medicine, aged 66 ; Dr. K. A. IOUDINE, director of the ophthalmological clinic at Saratov University and organizer of the anti-trachoma institute on the Lower Volga ; Dr. BOUSQUET, emeritus professor of surgery and director of the medical school at Clermont-Ferrand and national correspondent of the Académie de Médecine ; Dr. HEINRICH HAIKE, extraordinary professor of otology at Berlin, aged 70 ; and Geh. Rat Professor ALBERT SIPPEL, an eminent Frankfurt gynaecologist, aged 83.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

The House of Commons reassembled on May 29th and the House of Lords next day. The business of the week in the Commons included a debate on the Ministry of Education Estimates, and the committee stage of the money resolution relating to the milk marketing scheme.

On May 29th the Statutory Salaries Restoration Money Resolution was taken by the House of Commons in committee. Mr. Chamberlain, Chancellor of the Exchequer, in moving the resolution, said that abatements which were made in salaries and allowances in 1931 would be restored by one-half by administrative action where that was possible. Certain salaries, however, were fixed by statute, which required legislation to restore abatements. The resolution was moved to enable that legislation to be introduced; the first paragraph went further than was necessary to restore half the abatements made in 1931, and would authorize a Bill to restore the other and second portion of the abatements at some future time, if it was thought desirable to do so, without further legislation. The resolution was accepted.

Diphtheria and Enteric Inoculation in the Army.—On May 29th Mr. GROVES asked the Financial Secretary to the War Office if instructions of any kind had been issued to Army Medical Services or any other department of the Army in connexion with inoculation against diphtheria and enteric. Mr. DUFF COOPER replied in the affirmative. Immunization by means of protective inoculation against diphtheria and typhoid fever was on a voluntary basis in the Army. All ranks, with few exceptions, took advantage of these preventive measures in their own interests.

Fatal Road Accidents to Children.—On May 29th Sir HILTON YOUNG informed Mr. Groves that figures of the number of fatal accidents occasioned to children in the United Kingdom last year were not yet available. In 1932 the approximate number of persons in Great Britain under 15 who died as a result of accidents was 3,700. Of these deaths approximately 1,450 were due to road accidents. The other principal causes were burns and scalds, suffocation, drowning, falls, and inattention at birth.

Import Duty on Publications of Learned Societies.—On May 29th Captain CUNNINGHAM-REID asked if the Government would consider excluding from the operation of the Additional Import Duties (No. 6) Order, 1934, the publications of learned and scientific societies. Mr. HORE-BELISHA answered that this question was one in the first instance for the consideration of the Import Duties Advisory Committee, to whom representations should be made by the parties concerned.

Medical News

The Prosser White Oration before the St. John's Hospital Dermatological Society will be delivered by Dr. William Allen Pusey of Chicago on Wednesday, June 27th, at 5 p.m., at the Royal Society of Medicine, by permission of the president and council of the society. Dr. Pusey's subject will be "Disease, Gadfly of the Mind, Especially the Stimulus of Disease in the Development of the Mind."

Lord Moynihan will open the new private ward block of the East Suffolk and Ipswich Hospital, and the new ear, throat and nose, and *x*-ray departments, on Thursday, June 7th, at 3 p.m.

The Committee Against Malnutrition will hold a public meeting at 8 p.m. on Wednesday, June 13th, at 34, Red Lion Square, Southampton Row, W.C.1. The chair will be taken by Sir Frederick Gowland Hopkins, P.R.S., and Dr. Stella Churchill, Professor J. B. S. Haldane, Dr. R. D. Lawrence, and Dr. R. A. Lyster will be among the speakers. Tickets (1s.) can be obtained from the honorary secretary, 19c, Eagle Street, Holborn, W.C.1.

A short course of lectures, on the approach to the psychoneuroses (for practitioners and medical students), will be given at the Institute of Medical Psychology, Malet Place, W.C., beginning June 18th. The fee for the course is £2 2s. for medical graduates and 10s. 6d. for medical students.

The British Waterworks Association will hold its twenty-third annual general meeting and conference in Edinburgh from June 26th to 30th. The subjects of "The Drought and its Lessons" and "Freshwater Biological Research and Water Supply" will be open for discussion arising out of the report of the Executive Committee, and papers will be read on "The Policy and Practice of Chlorination of Water Supplies," by Colonel P. S. Lelean, professor of public health, Edinburgh University, and on "Consumption, Misuse, and Waste of Water," by Mr. John Bowman.

The Joint Tuberculosis Council has arranged a post-graduate course, to be given by the medical and surgical staff of the Royal Chest Hospital, City Road, E.C., for one week from June 18th. The fee for the course is £3 3s. All inquiries should be addressed to the honorary secretary for post-graduate courses, Joint Tuberculosis Council, Pembury, The Drive, Rickmansworth, Herts.

The Fellowship of Medicine (1, Wimpole Street, W.1) announces further medical lectures at 11, Chandos Street, W., on June 5th and 12th, at 2.30 p.m.; also on June 9th, at 3 p.m., a surgical lecture-demonstration at the National Temperance Hospital. On June 9th and 10th there will be a week-end course in obstetrics at the City of London Maternity Hospital; from June 11th to June 23rd a course in medicine, surgery, and the specialties at the Prince of Wales's Hospital; and from June 11th to 16th a course in proctology at St. Mark's Hospital. Other forthcoming courses include cardiology at the National Heart Hospital, June 25th to July 7th; diseases of children at the Children's Clinic, June 25th to July 7th; ophthalmology at the Central London Ophthalmic Hospital, July 2nd to July 28th; a week-end course in medicine and surgery at the Metropolitan Hospital, June 30th and July 1st. Particulars are given each week in the diary column of our *Supplement*.

We are informed that the formal opening of the Voluntary Hospitals Conference by the Prince of Wales in the Guildhall on Wednesday, June 13th, will take place at 11.30 a.m., and not at 10 a.m. as previously announced.

A post-graduate course on tuberculosis will be held at the Hôpital Broussais, Paris, under the direction of Professor Émile Sergent, from June 11th to July 7th.

The National Birth Control Association (with which is incorporated the Birth Control Investigation Committee) has arranged a conference on birth control, for general nurses, public health workers, and midwives, to be held at the College of Nursing, Henrietta Street, London, W.1, on Friday, June 15th. At the morning session, with Lord Horder in the chair, Mr. Claude Mullins, metropolitan stipendiary magistrate, will lecture on "The Ethics of Birth Control," and Mrs. Stocks, J.P., on "Birth Control and the Public Health Service." In the afternoon, with Lady Denman in the chair, Dr. Helena Wright will lecture on "The Technique of Birth Control," and Mr. Cedric Lane-Roberts, F.R.C.S., on "The Contribution of the Nursing Profession." There will be time for discussion after each lecture. Tickets (price 2s. 6d.), admitting to both sessions, can be obtained from the secretary, N.B.C.A., 26, Eccleston Street, S.W.1.

The sixth international medical post-graduate course arranged by the Tomarkin Foundation will be held at St. Moritz (Grisons, Switzerland) from August 5th to 18th. The subject-matter to be dealt with is grouped over the following special branches: heart diseases, diseases of children, balneology, nutrition problems, gastro-intestinal diseases, and social medicine. Particulars may be had from the secretary, Tomarkin Foundation, Via Marco Minghetti 17, Rome.

The June number of *Great Thoughts* includes a well-informed and well-written article, over the signature "Note-Taker," on the public career of Sir Henry Brackenbury, Chairman of Council of the British Medical Association.

The ninth International Congress of Dermatology and Syphilology will be held at Budapest, under the presidency of Professor Louis Nekam, from September 15th to 21st, 1935. Dr. A. M. H. Gray of 69, Harley Street, W.1, the national secretary for this country, will be glad to receive short papers before the end of 1934, or at the latest by the end of January, 1935.

The twentieth International Congress on Alcoholism will be held at the Imperial Institute, South Kensington, from July 30th to August 3rd, under the presidency of Lord Astor. The aim of the congress is to secure a comprehensive world picture of the present position concerning alcoholism in its various ramifications in social life. Further information can be obtained from the convener, Dr. C. C. Weeks, 33, Bedford Place, W.C.2.

The annual congress known as the Journées Médicales Belges will be held in Brussels under the presidency of Professor Edgard Zunz from June 23rd to 27th, when the subject for discussion will be the physiology and pathology of the endocrine glands. The opening address will be delivered by Professor Loeper of Paris.

The London County Council, in an advertisement published this week, invites applications for the post of director of the radiological department of the Hammersmith Hospital and British Post-Graduate School, Ducane Road, W., and consulting radiologist to the Council's hospitals. The salary is £1,500 a year, and application forms, containing full particulars, may be obtained from the Clerk of the Council, County Hall, S.E.1, and are returnable by June 18th.

Dr. B. Holroyd of Pannal, near Harrogate, has, for the fourth successive year, been elected chairman of the Claro Guardians Committee of the West Riding County Council.

Professor Max Neuburger, having reached the age of 65, is retiring from the chair of medical history in the University of Vienna. He will continue his directorship of the Medico-Historical Institute.

The eightieth birthday of Professor Johann Horbaczewski, who was appointed the first Minister of Health in Austria in June, 1917, was celebrated on May 15th in the Ukrainian Free University of Prague. As a young assistant of Professor E. Ludwig in 1882 he had carried out the artificial preparation of uric acid.

Dr. John A. Hartwell has been nominated president of the New York Academy of Medicine.

Included in the will of the late Dr. Edward J. Cave of Bath, who left £49,679, is a bequest of £6,000 to St. Bartholomew's Hospital, London, for an entrance scholarship to be known as the "Helen Cave Memorial Scholarship."

The late Mr. Ernest White of Clanfield bequeathed £1,000 to the Radcliffe Infirmary, Oxford, to endow a bed to be used as far as may be for patients from Clanfield, and in the event of his net estate being more than £30,000, a further £1,000 to the Radcliffe Infirmary for general purposes. The net personalty of Mr. White's estate was £66,600.

The following appointments have recently been made in foreign faculties of medicine: Dr. L. Melanowski, professor of ophthalmology at Warsaw; Dr. Popoviciu, professor of physiology at Cluj, in succession to Professor Nitzescu, who has been appointed to the chair of physiology at Bucarest; Dr. Max Baur, rector of Marburg University, professor of pharmacology at Frankfurt; Dr. Mario Aresu, professor of clinical medicine at Cagliari; and Dr. H. A. Tschernogabow, professor and director of the Dermatological Clinic of the Second University, Moscow, in succession to Professor Arthur Jordan.

The supplement to the *Paris Médical* of May 12th contains a complete list of the medical staff of the various Paris hospitals.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

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The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

? Bed-sore: Diagnosis Wanted

Dr. R. STEVENSON DOIG (Stornoway, Isle of Lewis) writes: I should be greatly obliged if some expert surgeon would give me his opinion on whether the condition described below is or is not a bed-sore. I had a woman in the hospital with an osteomyelitis of the symphysis pubis. This was operated upon on November 13th last after the patient—a very sturdy, well-built woman—had been in bed for a month. There was no sign of anything wrong with her back on the day of operation. However, the day after, when I turned her over on her face to allow the wound to drain, I discovered a red, inflamed area the size of my hand over the sacrum: it had a raised edge and a "root," while in the centre was an elliptical spot the size of a pigeon's egg, which was black and without sensation. Thinking of erysipelas, I painted around with iodine and applied ichthyol and glycerin over it. After two days serum oozed out, and the black portion began to separate. Hot boric foments were now applied, and two days later a huge slough came away right down to the sacrum, while pockets of pus were all around the central opening, and extended beneath the skin for two to three inches, and in parts a probe went in two and a half inches deep. The root was exquisitely tender. A bacteriological examination on December 2nd, 1933, revealed staphylococci. (The only organism present in the osteomyelitis was *B. coli*.) The lesion gradually became more widespread, and did not heal up until the beginning of April this year. The Wassermann reaction was negative. The opening was situated on the left buttock, but the undermining extended for three inches past the middle line to the right buttock. A surgeon who exposed the sacrum found it healthy. There has been divergence of opinion as to whether it was a bed-sore, and I would be grateful for help as to the nature of the initial condition in November.

Persistent Epistaxis

"W. D. C." (Alloa) has a patient who suffers from severe epistaxis. Examination of urine, blood pressure, heart, and blood has failed to reveal anything abnormal, and there is nothing in the nose of an unusual nature, though the mucous membrane is very congested. Local treatment has been tried—weak caustic, bland ointments, and cautery; internally, calcium lactate and ammonium carbonate have been given. The patient states that the condition came on after a prolonged period of nursing, with heavy lifting. "W. D. C." would like to know of any further treatment which might prove beneficial.

Wanted: G.P. Laboratory Equipment

"Q. R. S." asks for information as to the setting up of a cheap bacteriological laboratory in connexion with a surgery, and where such could be procured, as well as media, etc.

Pruritus Ani

Dr. CALEB JOYCE (Melbourne) writes, in answer to "M. O." in the *Journal* of March 3rd: I agree regarding diet as a cause; another cause is personal idiosyncrasy as to some article of food, the most important being the smear of faecal matter left after defaecation and imperfect cleansing by means of paper. I have found the solution of the trouble in many cases to consist in the use of a damp cloth following the use of paper.

"Oliguria"

Lieut.-Colonel EDWARD GOWLLAND, M.B. (Commandant, Star and Garter Home for Disabled Sailors and Soldiers, Richmond, Surrey), writes: There are under my care a number of cases of paraplegia following wounds of spine, etc., who occasionally have attacks similar to the patient described in Dr. Miles's letter—that is to say, the patients pass practically no urine for several days, and on catheterization a maximum amount of some 4 to 5 oz. is obtained during twenty-four hours. I have tried all ordinary remedies, but have come to the conclusion that nephritin tablets (Coates and Cooper) solve the difficulty more quickly and satisfactorily than any other treatment. These tablets are made of kidney substance and have to be given in large doses—namely, twenty to thirty tablets a day. The proof of the pudding is in the eating, and I can only say that all who have been treated in the way indicated frequently ask for a repetition of a course of these tablets when they find the amount of urine becoming scanty.

"R. B. G." writes, in answer to Dr. Miles in last week's issue (p. 972): Has he considered the possibility of his patient getting rid of her urine, secretively, in a hot-water bottle in the bathroom? I read of a somewhat similar case lately—I forget where, and in a nursing home to boot! But there is no end to deceptions, especially in a mental case like Dr. Miles's.

Income Tax

Substitute During Leave

"A. W. B." holds an appointment, and his council granted him leave for special study on condition that he provided a locumtenent. Can he deduct the cost—twenty-four guineas—in making his return?

⁂ We fear not. If the council had granted him leave without pay and had provided the locumtenent, the position so far as "A. W. B." is concerned would have been similar in common sense but different in law. As it was he received the emoluments in full, and the question is whether he can claim that what he paid was expended in carrying out his duties. In fact they were incurred in enabling him to do something else, and do not seem to fall within the very restrictively defined scope of the deductions.

LETTERS, NOTES, ETC.

Fistula-in-ano

Dr. R. YOUNG KENNY (New Malden) writes: The aetiology of fistula-in-ano is briefly dismissed by nearly all authors of our surgical textbooks with practically the same words, which are so welcome to the medical student for examination purposes on account of the brevity of the statement—"fistula is always the result of abscess." One invites condemnation for ever questioning the accuracy of so useful and time-honoured a solution of the problem. I have been led to doubt the accuracy of this brief statement, and to place emphasis on the mechanism of rectal flatus as a primary aetiological factor. Observe what happens when a tyre with a weak outer cover is overcharged. The elastic lining bulges through the weak places. This, I think, is a picture of what occurs in the production of fistula. Near the sphincters, where general expansion is restricted, the gas pushes the elastic lining in the line of least resistance, and under the high pressure which sometimes obtains forms, at first, a dimple. High pressure recurs and the dimple deepens to a small crypt, and then to a fairly deep cul-de-sac. This advancing channel may be obstructed by a more resisting band of tissue and turned aside, or even made to branch in its course, following lines of least resistance. Such a channel may readily harbour infection which will produce an abscess or may go on growing till, under great strain and with much pain, it bursts to make an outlet. The practical reasons for bringing up this question are: that the treatment of fistula should commence before the fistula develops, and it takes it out of the domain of the surgeon to that of the physician provided the latter starts treatment in time. Since constipation *with much gas* is the aetiological factor, this must be treated and not neglected if fistula is to be prevented.

Planning a House for the Tropics

Engineer I. VICK, writing from Java to the *Arch. f. Schiffs- u. Tropen-Hygiene* last year, proposed a scheme for building in the Tropics the most comfortable sort of house. In the Tropics, it must be remembered, the sun will appear at every point of the compass at some time in the year, so that houses are much the same all round; there is not the difference between front and back that is seen at home, and their first function is to protect from sun and rain. The characters of the tropical climate are, he says, high temperature, high humidity, little cooling at night, and stillness of the air. Nowadays men make less money in the Tropics than formerly. Hence they have to live there longer than of old, and require all the better housing, while one of the great needs in their houses is ventilation to cool them. The author's first approximation to the ideal tropical home has a plan roughly square, a veranda at each end connected by a central lobby or hall through which there will generally be a draught, and on each side of it two square sleeping rooms, side by side, with a window on the outer wall. But in his final plan he has the good idea to turn the rooms of each pair outwards through half a right angle, thus making the house octagonal in plan, somewhat rosette-shaped. Thus he is able to put a window into each side wall of the room, and beyond the end wall is an annexe, containing the bathroom and latrine, which shelters the living room from the direct rays of the sun. These rooms in the Tropics should never measure less than 13 ft. by 13 ft., and 9½ ft. high (1,600 cubic feet). A damp-proof course should not be forgotten; the walls are to be of porous or honeycomb cement (itself an insulator), faced outside with white glazed tiles. The floor, too, is tiled, and there is a 3 ft. by 3 ft. opening in the ceiling, communicating with the space under the octagonal roof. This opening in the ceiling and the small ventilators under the windows are protected against insects by wire gauze, even if this does halve the effective apertures. The octagonal roof is of corrugated iron, and so the air under it is heated and escapes through louvres, being replaced by cooler air from the ventilators through the ceilings. To prevent the warm air under the roof from heating the rooms below it the ceilings are covered on the upper side with aluminium foil, cheap and lasting, and sure to reflect radiant heat. Sun-blinds hang from the eaves of the roof, so are never just in front of the windows, and do not impede ventilation.

Rapid Labour

Dr. ERIC KENDERDINE (Coventry) writes: I attended two rapid confinements last week, which seem of interest. A lady with her second baby began pains at 20.30 o'clock, the birth occurring at 20.55. The second case was a primipara. She had a hot bath on the Sunday at 23 o'clock, and noticed a slight "show." She went to bed and awoke at 1 o'clock. She defaecated normally, but "had to support herself in front." A feeling of weight at the rectum sent her in to see the nurse, sleeping in the next room, at 2.20, when the first real pain occurred. This made her stand first on one leg and then on the other. The nurse was surprised to see the head crowned, and hurried her on the bed, where birth took place at once. The patient then started laughing, as she did not think it could be so easy. Both of these mothers had calcium-vitamin therapy, and both babies were of normal size.

Medical Golf

The spring meeting of the Sussex Medical and Dental Golfing Society was held on the links of the West Sussex Golf Club on Sunday, May 27th. In the morning the competition for the Rolls-Hoare Cup, 18 holes medal play, was won by A. R. Ferguson, 74 - 2 = 72; C. Guy Whorlow, 92 - 15 = 77, being second. In the afternoon foursomes resulted in a tie at 1 up between H. Butcher and G. Thwaites, F. Graham Bonnalie and J. H. Raymond, and A. R. Ferguson and R. H. Barron.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 41, 42, 43, 44, 45, 48, and 49 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 46 and 47.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 276.